METROLINK

Integrated Transport. Integrated Life.

A9.2 Overall Scheme Traffic & Transport Assessment

Contents

1. Introduction

1.1 Introduction

Jacobs/IDOM has been commissioned to undertake the Environmental Impact Assessment Report (EIAR) in support of the proposed Dublin MetroLink project (hereafter referred to as the Project). The EIAR is being prepared to assess the environmental impacts of the Project, including in relation to traffic and transport.

This Traffic and Transportation Assessment (TTA) presents an overview of the operational impacts associated with the Project as a whole, on the Traffic and Transport network. This TTA considers the strategic impact of the Project, as opposed to the local level impacts at each station. As such, individual station-specific TTAs have been prepared separately which present further detail on the local level impacts at each station.

Jacobs/IDOM has also been commissioned to undertake a scheme traffic management plan (STMP). The STMP is a standalone report within the EIAR. The STMP assesses the impact of the construction of the Project on all road users and proposes mitigation measures where appropriate.

A summary of the TTAs and STMP will be included within EIAR Chapter 9 (Traffic and Transportation).

1.2 Assessment Scenarios

In order to provide a rounded assessment of the proposed Project, its impacts have been reviewed for a range of future years, and in the context of two alternative future scenarios. The forecast years are 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). As outlined in Table 1.1, Scenario A includes the proposed Project and committed transport schemes only, while Scenario B includes a range of further planned schemes depending on the forecast year.

Table 1.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project.
Do Minimum Scenario	Committed transport schemes in the absence of the Project.
Do Something - Scenario A	Scenario with the Project and committed transport schemes only.
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for Opening year (2035) and planned schemes under the Transport Strategy for the GDA for the Design Year (2050) and the Forecast Year (2065).

Committed transport schemes in the Do Minimum scenario and in Scenario A, that have been progressed through planning and are either under construction or are programmed into the capital expenditure budget, include, but are not limited to:

- Luas Green Line Capacity Enhancement- Phase 1;
- BusConnects Dublin Area Network Redesign Services; and,
- Bus Connects Fares and Ticketing.

Scenario B represents the likely future receiving environment and is based on the delivery of the schemes identified within the National Development Plan for 2035, and on the implementation of the NTA's Greater Dublin Area (GDA) Transport Strategy for 2050 and 2065. As such, this scenario considers the cumulative impacts of interactions between other projects that are most likely to impact on transport movements in the area. Schemes included in this scenario are, but are not limited to:

- Luas Green Line Capacity Enhancement- Phase 2;
- Luas Finglas;
- Luas Lucan;
- BusConnects Core Bus Corridors (planned 16 corridors); and
- DART+.

More information on each modelled scenario is available in the Transport Modelling Plan (Appendix A9.3).

1.3 Project Overview

The proposed Project will be a high-capacity, high frequency public transport system running from Swords to Charlemont, linking Dublin Airport, Irish Rail services at Glasnevin, the Dublin Area Rapid Transit (DART) network at Tara Street, Dublin Bus and Luas services at Charlemont, improving integration across public transport network in the Greater Dublin Area (GDA).

As well as linking major transport hubs, the proposed Project will connect key destinations including Swords, Ballymun, the Mater Hospital, the Rotunda, Dublin City University and Trinity College with much of the 19-kilometre route running underground, as shown in Figure 1.1.

When operations commence, there will be a service every 3 minutes during peak periods. This can rise to a service every 90 seconds, with the system capable of carrying a peak line flow of 20,000 passengers per hour in each direction.

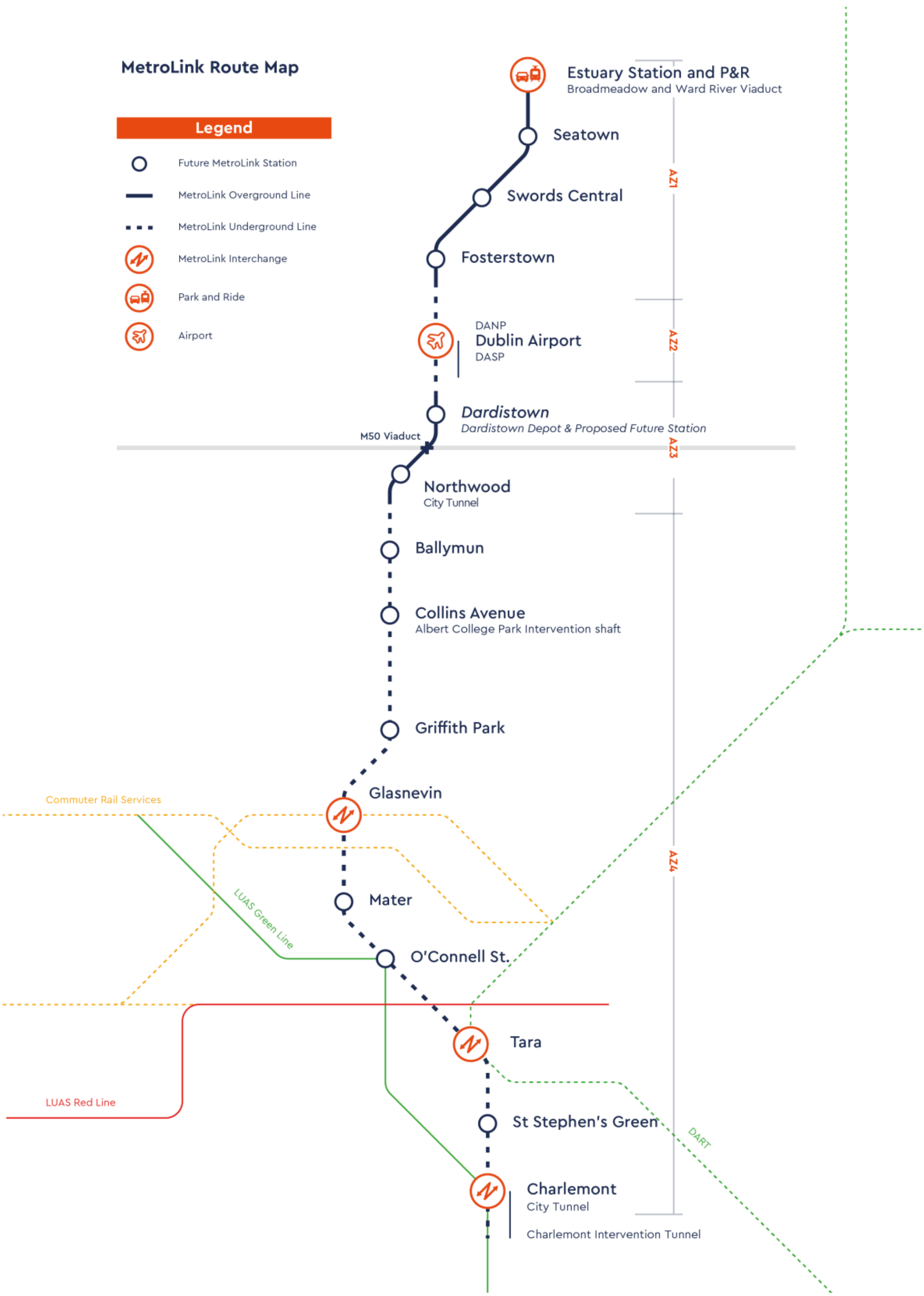

Figure 1.1: Proposed Project Alignment and Geographical Sections

1.4 Project Description

1.4.1 Project Objectives

The overall project objective for the Project, as established by the National Transport Authority (NTA) and Transport Infrastructure Ireland (TII) and as informed by planning policy context, is:

'To provide a sustainable, a safe, efficient, integrated and accessible public transport service between Swords, Dublin Airport and Dublin City Centre'. (National Development Plan 2021-2030).

Beneath this overall objective, EIAR Chapter 4 (Description of the MetroLink Project) details that the Project's sub-objectives are to:

- Cater for existing public transport travel demand and support long-term patronage growth along this corridor through the provision of a high frequency, high-capacity public transport service which supports sustainable economic development and population growth;
- Improve accessibility to jobs, education and other social and economic opportunities through the provision of improved inter-modal connectivity and integration with other public transport services and connectivity for national and international visitors using Dublin Airport;
- Enable compact growth, unlock regeneration opportunities and more effective use of land in Dublin, for present and future generations, through the provision of high-capacity Public Transport whilst integrating into the existing public realm;
- Deliver an efficient, low carbon and climate resilient public transport service, which contributes to a reduction in congestion on the road network in the Dublin Region and which supports the advancement of Ireland's transition to a low emissions transport system and delivery of Ireland's emission reduction targets; and
- Provide a high standard of customer experience including provision for clean, safe, modern vehicles and a reliable and punctual service with regulated and integrated fares.

2. Proposed Project

2.1 Overview of Proposed Project

EIAR Chapter 4 (Description of the MetroLink Project) details the alignment descriptions of each geographical section, as well as the associate tunnels and stations along the route.

2.1.1 AZ1 Northern Section: Estuary to Dublin Airport Tunnel North Portal (DANP)

The proposed AZ1 Northern Section is approximately 6km in length, encompassing the start of the alignment, Estuary Station and Park and Ride, Seatown Station, Swords Central Station and Fosterstown Station. The proposed Estuary Station and Park and Ride Facility will be located in the Lissenhall area approximately 560m south-west of Junction 4 of the M1. From Estuary Station and Park and Ride Facility the proposed Project alignment will head south, passing over the Broadmeadow and Ward Rivers on the Broadmeadow and Ward River Viaduct. It will then pass to the east side of Balheary Park before going into a section of cut and cover under Estuary Roundabout on the R132 Swords Bypass.

South of Estuary Roundabout, the alignment will be in open cut for a short distance before entering another section of cut and cover to cross to the eastern side of the R132 Swords Bypass. This section of cut and cover will continue to a point south of Seatown Road Roundabout where Seatown Station will be located.

The alignment between Seatown Station and Swords Central Station will be east of the R132 Swords Bypass, will be in an open cut, with localised cut and cover sections under the Malahide Road Roundabout and to allow reinstated access to some private properties.

The alignment between Swords Central Station and Fosterstown Station will be in cut and cover, as required to pass under Pinnock Hill Roundabout. It will then cross to the western side of the R132 Swords Bypass just south of the existing junction of the R132 Swords Bypass, Nevinstown Lane and Boroimhe Road, in a section of cut and cover.

The alignment will then pass through existing agricultural lands on low embankments and cuttings and will cross the Sluice River and Forrest Little Stream, which will be culverted.

Just north of the Naul Road, the DANP will be constructed as part of the single bore tunnel under Dublin Airport.

2.1.2 AZ2 Airport Section: Dublin Airport North Portal to South Portal (DASP)

The proposed Project alignment through the AZ2 section will enter a tunnel, north of Naul Road, taking advantage of the natural terrain level difference, via the DANP before proceeding south underneath Dublin Airport. The 2.5km tunnel will pass under the northern part of the airport apron and hangar areas, and internal roads before arriving at the Dublin Airport Station. This underground station will be located under an area currently occupied by the Terminal 2 surface car park, within the area designated as a Ground Transportation Centre in the Dublin Airport Central Masterplan (FCC 2016). The tunnel will continue south from the Dublin Airport Station and will pass under Terminal 2 and the apron before emerging through DASP in agricultural land south of the airport in Dardistown.

2.1.3 AZ3 Dardistown Section: Dublin Airport South Portal to Northwood

Section AZ3 will be 2 kilometres long in total with below ground sections in cut-and-cover and open cut and an elevated section over the M50 Motorway.

The Dardistown Depot and associated buildings will be located at ground level on the lands to the west of the rail line and proposed future station at Dardistown which will lie in retained cutting. From Dardistown station the alignment will continue south, rising to cross over the M50 to the east of Junction 4 on a viaduct before descending to ground level, turning to the south-west and descending below ground level in cut and cover to pass under the R108 Ballymun Road to Northwood Station. The Northwood Portal for the City Tunnel will lie immediately south of Northwood Station from where the alignment will continue in tunnel southwards toward the proposed underground Ballymun Station.

2.1.4 AZ4 Northwood to Charlemont Section

AZ4 will be 9.4 kilometres long. The alignment will continue in a tunnel from Northwood Station to Ballymun Station and will pass back under the R108 Ballymun Road before deviating east to the proposed Collins Avenue Station.

The proposed Project will continue under the R108 Ballymun Road before turning east under St. Mobhi Road, with the tunnel following the existing ground level. It will deviate slightly east to the proposed Griffith Park Station. The alignment will then continue south under R108 St. Mobhi Road, descending deeper to cross under the Tolka River. Continuing south, it will closely follow Botanic Road, before rising slightly to Glasnevin Station. A major interchange station for the Maynooth and Kildare mainline rail services is proposed for the Glasnevin Station location, which will provide users with a connection to other rail services in addition to local bus routes.

From here the proposed Project will pass under the Royal Canal and will deviate away from the R108 St Mobhi Road in a south-easterly direction towards Mater Station located in the Four Masters Park by St Joseph’s Church, on the corner of Eccles Street and Berkley Road and across the street from the Mater University Hospital.

From the Mater Station the proposed Project will continue underground in a south-easterly direction descending towards O’Connell Street, progressing under rows of Georgian Houses lining Blessington Street, Frederick Street North and Parnell Square East. The proposed Project will pass near to the Garden of Remembrance, the Rotunda Hospital and the Gate and Ambassador Theatres. O’Connell Street Station is proposed to be located within the planned development area immediately west of O’Connell Street and south of Parnell Street.

The proposed Project will then continue southwards and will pass under O’Connell Street, progressing east and under Dublin City Centre, where it will cross under the Red Line Luas track near the Abbey Theatre. The proposed Project will then move deeper to cross under the River Liffey towards Tara Station. The proposed location for the Tara Station will be underneath an area bordered by existing rail line to the east, Poolbeg Street to the north, Tara Street to the west and Townsend Street to the south.

Tara Station is proposed to be a major interchange station to provide connections to the train and DART services using the adjacent rail line. From Tara Station the proposed rail line will continue south and will pass under the eastern end of Trinity College Dublin campus.

The proposed Project will then proceed south of Leinster Street South, under several significant buildings including Leinster House, Government Buildings, the National Gallery, National Library, and the National Museum of Ireland. The proposed Project will then pass under St Stephen’s Green North before the alignment rises to the St Stephen’s Green Station.

The proposed St Stephen’s Green Station will be located under the R138 St Stephen’s Green East Road, outside the north-eastern corner of St Stephen’s Green.

Continuing south-west, the proposed Project will follow St Stephen's Green East and will continue along Earlsfort Terrace, passing close to the National Concert Hall, at which point it will turn south and pass under Harcourt Terrace and the Grand Canal before Charlemont Station. The proposed Charlemont Station will be located on a site south of the "Carroll's Building" on Grand Parade.

Charlemont Station is proposed to allow for an interchange to the Luas Green Line services. The bored tunnel will continue to allow for a turnback and will terminate south of Ranelagh.

2.2 Proposed Stations

There are 16 newly constructed stations proposed as part of the proposed Project, as detailed within Table 2.1.

It is proposed that the underground stations will be configured with the track through the middle of the station, with the platforms at the sides.

Table 2.1: Proposed Stations

AZ No.	Station Name	Level	Location
AZ1	Estuary	At surface	In farmland off the R132 adjacent to M1 Junction 4, north of the Broadmeadow River.
	Seatown	Retained-cut	On the eastern side of the R132 Swords Bypass, south of Seatown Road Roundabout.
	Swords Central	Retained-cut	On the eastern side of the R132 Swords Bypass, south-west of the Malahide Road Roundabout.
	Fosterstown	Retained-cut	At Airside Retail Park, adjacent to the R132 Swords Bypass.
AZ2	Dublin Airport	Underground	Under an existing surface carpark
AZ3	Dardistown (Future Station Location)	Retained-cut	Located on an undeveloped site between Dublin Airport and M50 Motorway.
	Northwood	Underground	Under the R108 Ballymun Road near Northwood Avenue junction.
AZ4	Ballymun	Underground	On the west side of the R108 Ballymun Road, by the Ballymun Shopping Centre.
	Collins Avenue	Underground	To the east of the R108 Ballymun Road, south of the junction with Collins Avenue.
	Griffith Park	Underground	Under the playing pitch of Home Farm Football Club, adjacent to the R108 St Mobhi Road.
	Glasnevin	Underground	Just north of the Royal Canal along the R135. An Iarnród Éireann railway station will also be constructed here on the existing railway to provide for interchange between the Iarnród Éireann mainline and commuter services on the Midland Great Western Railway (Maynooth Line) and the Great Southern and Western Railway (Kildare Line). .
	Mater	Underground	Under the Four Masters Park to the south-west of the Mater Hospital.
	O'Connell Street	Underground	Under a proposed development area between O'Connell St, Moore Lane and Henry Place and south of Parnell Street. Directly west of the O'Connell St Luas Stop.
	Tara Street	Underground	Under land adjacent to the existing Tara Street Station to provide for interchange to DART and mainline train services.

AZ No.	Station Name	Level	Location
	St Stephen's Green	Underground	Under St Stephen's Green East roadway and park.
	Charlemont	Underground	Under an area of land linked to the Carroll's Building on Grand Parade, in close proximity to the Charlemont Luas Stop.

2.3 Tunnels

The tunnelling is in two sections: the longest section runs from south of Northwood Station to Charlemont Station, crossing under Dublin City Centre; and the shorter section runs below Dublin Airport's land boundaries, crossing in a north-south direction.

The underground section of the proposed Project is constructed by two separate methods. The stations are constructed using the "cut-and-cover" method – excavating the site from ground level and covering it up again. The tunnels between stations are bored using Tunnel Boring Machines.

2.4 Portals

The entrances to the tunnelled sections are referred to as Portals. There are two portals proposed, at each end of the two tunnel sections. These are:

- Northern portal at the Naul Road, north of Dublin Airport; and
- Southern portal south of Old Airport Road.

2.5 Above Ground Track

The majority of the Project through the AZ1 Northern Section progresses in a cut section with a significant section of cut also in the Dardistown area. This section of the alignment is characterised by a shallow excavated alignment whereby the alignment runs below the existing ground level. For the lengths of the alignment proposed to be in cut, the proposed design incorporates sections of retained-cut; cut and cover and U-section structures as appropriate to the depth of the rail below ground level and available construction space.

2.6 Strategic Park and Ride at Estuary Station

A site to the north of Swords and to the south of the M1 was chosen as a Park and Ride facility. This location will include provision for 3,000 parking spaces adjacent to the proposed station at Estuary.

The Transport Strategy for the Greater Dublin Area 2016-2035 recognises that 'park and ride facilities…facilitate those living beyond the local walking catchment of rail, or feasible alternative public transport services, to access destinations through the public transport network'. The Strategy identifies Swords as one of the 'appropriate points' within the Greater Dublin Area for a 'strategic rail-based park and ride facility'.

The NTA's Park and Ride Strategy: Greater Dublin Area (2021) identifies that a Strategic Park and Ride site should 'facilitate the modal shift of long-distance car trips to public transport, at an early opportunity.' A key characteristic of a Strategic Park and Ride site is that it is 'located on an interchange between the National Roads Network and high-quality high-capacity public', and 'should not encourage people who would otherwise access public transport locally, to drive further to access a [Park and Ride] site.'

2.7 Dardistown Depot

The Dardistown Depot has been designed to maintain the total number of trains required in the Opening Year and the predicted future growth of train units as demand increases for the Project. It will be located near Dardistown Station and will house all the facilities required for the maintenance and operation of the proposed Project and its rolling stock. The depot located at Dardistown will have all the facilities required to both stable the rolling stock and to carry out light and heavy maintenance activities required for the metro system.

The Depot workforce will consist of approximately 100 staff.

The depot will operate 24 hours a day, in order to allow for rolling stock movements within the proposed commercial timetable and for wayside and vehicle maintenance of vehicles outside of these hours.

The future street level layout for Dardistown provides for two new priority junctions, including the existing junction off the R108, and the new depot main access off the Old Airport Road, to facilitate access to and from the depot for staff. As the station is not open for general public usage, it has been assumed that traffic volumes will remain low, similar to the baseline conditions.

2.8 Construction Phase

The STMP (Appendix A9.5) assesses the impact of the construction of the proposed Project on all users and proposes mitigation measures where appropriate, and as such, the Overall TTA and station specific TTAs do not present an assessment of the construction phase impacts associated with the proposed Project. A bespoke construction impact assessment methodology is described. Strategic and local area assessments are undertaken using this methodology and any residual impacts described.

2.9 Transport Features

EIAR Chapter 6 (MetroLink Operations and Maintenance) describes some of the key transport features at the proposed stations.

- Cycle parking
- Park and Ride;
- Step-free access for all;
- Taxi; and,
- Major Interchange.

2.9.1 Cycle Parking Provision

2.9.1.1 Potential Cycle Demand

A methodology has been applied to determine the potential demand for cycle parking within the vicinity of each of the stations. This methodology utilises the number of boarding and alighting passengers, the distance of origin/destinations from the station, and the location of the station (i.e., if it is is located in the Outer-City, versus Dublin City Centre). This methodology for calculating the potential cycle demand per station is presented in Appendix A4.1 of EIAR Chapter 4 (Description of the MetroLink Project). The potential cycle parking demand has been based on the results from an earlier opening year and a review has been undertaken to understand the impact of a 2035 Opening Year on this potential demand.

Table 2.2 presents the potential demand for cycle parking in the vicinity of each of the stations in 2035, and in the Opening Year + 5 Years (2040), by presenting the volume of passengers that meet the proposed criteria within the methodology. There is a 7% increase in potential cycle demand between the Opening Year and Opening Year + 5 Years.

Table 2.2: Potential Demand for Cycle Parking in Vicinity of Stations

Station	Location	Boarding or Alighting Numbers Analysed	Potential Cycle Demand	
			Opening Year	Opening Year + 5 Years
Estuary*	Outer Dublin	Boarding	-	-
Seatown	Outer Dublin	Boarding	**765**	**819**
Swords	Outer Dublin	Boarding	**1233**	**1320**
Fosterstown	Outer Dublin	Boarding	**788**	**843**
Dublin Airport**	Outer Dublin	Boarding	-	-
Northwood	Outer City	Boarding	**686**	**734**
Ballymun	Outer City	Boarding	**973**	**1042**
Collins Avenue	Outer City	Boarding	**1157**	**1238**
Griffith Park	Outer City	Boarding	**411**	**440**
Glasnevin – Metro+Rail	Outer City	Boarding	**496**	**531**
Mater	City Centre	Alighting	**164**	**175**
O'Connell Street	City Centre	Alighting	**236**	**253**
Tara Street	City Centre	Alighting	**973**	**1041**
SSG	City Centre	Alighting	**871**	**932**
Charlemont	City Centre	Alighting	**808**	**865**

*Cycling demand not calculated for Estuary Station as majority of boarding passengers are utilising Park and Ride facility.

**Cycling demand not calculated for Dublin Airport due to nature of travel to/from airports.

Large numbers can also be seen at Collins Avenue station as a result of the presence of Dublin City University in the 10-15 minute walking catchment, the station's key attractor in the area, which attracts a large volume of people during the AM peak period.

Table 2.3 presents the 12hr boarding and alighting numbers for the Opening Year and the Opening Year + 5 Years and using the National Cycle Manual's recommendation of provisions accommodating for 2.5% of daily boarders, presents the number of cycle parking spaces required to accommodate 2.5.% of this demand.

Table 2.3: Cycling provisions required as per National Cycle Manual Recommendations

	Opening Year		Opening Year + 5 Years ~7% Growth	
Station	**12hr Boarding**	**2.5% Requirement**	**12hr Boarding**	**2.5% Requirement**
Estuary P&R	115*	3	123*	3
Seatown	4,355	109	4660	116
Swords Central	5,520	138	5907	148
Fosterstown	6,772	169	7246	181
Dublin Airport	26,255	656	28093	702
Dardistown	-	-	-	-
Northwood	2,838	71	3037	76
Ballymun	8,400	210	8988	225
Collins Avenue	7,606	190	8138	203
Griffith Park	2,232	56	2389	60
Glasnevin	6,810	170	7287	182
Mater	4,757	119	5090	127
O'Connell Street	9,578	239	10249	256
Tara Street	16,126	403	17254	431
St Stephen's Green	11,321	283	12113	303
Charlemont	14,870	372	15910	398

*Estuary boarding numbers do not include those utilising the Park and Ride or the bus network to access

2.9.1.2 Proposed Cycle Spaces per Station

The proposed Project provides an amount of cycle parking that meets Opening Year (plus a margin) at all stations where there is sufficient space to appropriately accommodate this requirement. There are a number of stations where the potential cycle demand estimated exceeds the cycle parking provision provided. The proposed cycle parking provisions at each station are presented in Table 2.4. Assessment of the Projects proposed cycle provisions against the National Cycle Manual's standard of provisions for 2.5% of 12hr boarders (presented in Table 2.3) indicates that all stations in the Outer Dublin and Outer City locations (as far as Griffith Park, inclusive) will have sufficient provisions in line with the National Cycle Manual requirements. From Glasnevin southbound and all City Centre stations, the proposed cycle provisions do not meet the requirements of the National Cycle Manual.

The provisions may be facilitated directly at the station or integrated into the existing or new urban realm of surrounding developments in line with the objectives set out in Dublin City Development Plan. Bike sharing will make up a proportion of the potential demand, either through fixed docked services such as Dublin Bikes, or non-docked services such as Bleeper bikes.

Similarly, as new innovators are brought forward, some of the demand may also be met by other micro-mobility solutions. Further refinement of the numbers will be required to take into account the dynamic profile of the provisions

The methodology (presented in Appendix A4.1 Methodology for Potential Cycle Demand) considers the rate of turnover of cycle parking spaces, and utilises an assumption whereby 1 space on a public bicycle parking rack could facilitate 5 shared bicycle parking events during the 3-hour peak period used for calculating the potential demand.

This assumption has subsequently been applied to this Project's proposals for cycle provisions in the City Centre location to identify the potential number of users who can be accommodated by the proposed number of spaces during the 3-hour peak period. As Glasnevin is on the boundary of the Outer City location and the City Centre, a modified assumption has been applied to this station, whereby it is assumed that 50% of the provisions will be fixed, in line with the other stations in Outer Dublin and Outer City, and 50% will be dynamic provisions in line with the City Centre.

Table 2.4: Proposed Cycle Parking Provisions

Station	Project Proposals		
	Location	No of Spaces Proposed	Demand accommodated (Based on 1:5 for City Centre Stations – due to shared mobility)
Estuary	Outer Dublin	254	254
Seatown	Outer Dublin	480	480
Swords	Outer Dublin	942	942
Fosterstown	Outer Dublin	422	422
Dublin Airport	Outer Dublin	72	72
Dardistown	Not open to public	-	-
Northwood	Outer City	204	204
Ballymun	Outer City	292	292
Collins Avenue	Outer City	370	370
Griffith Park	Outer City	176	176
Glasnevin – Metro+Rail	Outer City	120	360
Mater	City Centre	70	350
O'Connell Street	City Centre	0	0
Tara Street	City Centre	256	1,280
St. Stephen's Green	City Centre	82	410
Charlemont	City Centre	162	810

2.9.2 Park and Ride Facility

A 3,000-space Park and Ride Facility will be provided at the Estuary station on the northern end of the proposed Project.

2.9.3 Access for All

The proposed Project has been designed on the principle of *Access for all*. The design has been developed to meet all legislative requirements relevant to accessibility including the Disability Act 2005 and in turn the Sectoral Plan for Accessible Transport under the Disability Act 2005 (DTTAS 2012) for same. The design will also comply with Part M to the Second Schedule of the Building Regulations. For example, wheelchair users will be able to access each train as the floor of the train will be at the same level as the platform; there will be a very narrow gap between the train and the platform, and all platforms will incorporate ramps or lifts for access purposes.

Further details of the design features of the Project are contained within the EIAR Chapter 6 (MetroLink Operational Phase).

2.9.4 Taxi and Provision

Taxi facilities, either new or existing, are provided at Estuary, Fosterstown, Dublin Airport, Northwood, Ballymun and Glasnevin stations, as outlined in Table 2.5.

2.9.5 Interchange with Other Modes

The Project has been designed to maximise interchange with other modes of transport, specifically more sustainable modes of transport, such as walking, cycling and public transport. Major interchange facilities are available at Estuary, Glasnevin, Tara Street and Charlemont.

The Estuary Park and Ride facility will provide for 3,000 car parking spaces to facilitate interchange between the road network and the proposed Project and allow people to reduce the distance of their car travel. Direct interchange with the Luas network will be possible at Charlemont station, which is served by the Luas Green Line, however other Dublin City centre stations such as O'Connell Street Station, are in close proximity to both the Green and Red lines. Direct interchange with the DART heavy rail line will be possible at Glasnevin station, and Tara Street station, to facilitate interchange with the Maynooth and Kildare Lines, and other commuter services.

Dublin Airport is served by a large number of bus routes, facilitating interchange with the bus network across the country.

Table 2.5: Interchange with Other Transport Modes at Stations

Station	Pedestrian Access	Bicycle Access	Public Transport	Other Vehicular Access
Estuary Station	Access to the Station and Park and Ride via new section of Swords Western Distributor Road and Ennis Lane junction which will have a junction with the R132 where footpaths will be provided. In addition, appropriate pedestrian facilities will be provided at the proposed junctions along the R132 to allow good pedestrian permeability from east of the R132.	Access to the Station and Park and Ride via new section of Swords Western Distributor Road and Ennis Lane junction which will have a junction with the R132 where cycle lanes will be provided. In addition, appropriate cycling facilities will be provided at the proposed junctions along the R132 to allow good bicycle permeability from east of the R132.	Bus services will access a Bus Interchange within the site. Six bus stops will be provided adjacent to the station.	Access to the Station and Park and Ride via new section of Swords Western Distributor Road which will have a junction with the R132. In addition, a junction is proposed with Ennis Lane. Taxi Rank and/or Drop Off Facilities will be provided at this station.
Seatown Station	Existing footbridge crossing the R132 will be removed. Access to the station for	Access to the station will be facilitated by an at	Adjacent Bus Stop serving station.	No Facilities

Station	Pedestrian Access	Bicycle Access	Public Transport	Other Vehicular Access
	pedestrians will be facilitated by an at grade pedestrian crossing over the R132.	grade cycle crossing over the R132.		
Swords Central Station	Access to the station for pedestrians from the west of the R132 i.e Swords and the Pavilions Shopping Centre will be facilitated by an at grade pedestrian crossing over the R132.	Access to the station for cyclists from the west of the R132 i.e Swords and the Pavilions Shopping Centre will be facilitated by an at grade cycle crossing over the R132, and a toucan crossing at the station.	Adjacent Bus Stop serving station.	No Facilities
Fosterstown Station	Access to the station for pedestrians from Fosterstown will be facilitated by an at grade pedestrian crossing over the R132. In addition, a new walkway is proposed on the east side of the R132 to allow access to the adjacent retail park.	Access to the station will be facilitated by an at grade cycle crossing over the R132 and atoucan crossing at the station.	New Bus Stops on Bus Connects corridor will be provided adjacent to station	Drop Off facilities will be provided at this station.
Dublin Airport Station	Appropriate pedestrian connectivity is provided to Terminal 1 and Terminal 2 buildings from the Metrolink station by means of pedestrian crossing and path.	Bike parking is provided and links to the existing cycle network around the airport road.	The Dublin Airport station design includes new coach parking off a public plaza facilitating passenger interchange between bus, metro and Dublin airport. The design includes 16 bus bays at 45 degrees and 4 parallel bus bays to maximise the capacity. The bus bays are connected with proposed road which tie-in to the existing road network along the existing bus bays in front of the T1 terminal.	No Facilities Interchange with existing airport Taxi Rank and / or Drop Off Facilities.
Dardistown Station	Not a public station and as a result there will be no public access arrangements.	Not a public station and as a result there will be no public access arrangements.	No facilities	A maintenance access road will be provided to facilitate routine maintenance of the station and surroundings.

Station	Pedestrian Access	Bicycle Access	Public Transport	Other Vehicular Access
Northwood Station	Pedestrian access provided via station entrances on both sides of the R108 with enhanced pedestrian access to the station location.	Cycle access provided by way of enhanced cycle access to the station location.	Location of Proposed Bus Connects stop located adjacent to station to allow for integration.	Drop Off Facilities will be provided at this proposed station.
Ballymun Station	Enhanced pedestrian crossing of the R108 to provide greater pedestrian capacity.	Enhanced crossing of the R108 to provide enhanced cycle access.	Location of Proposed Bus Connects stop located adjacent to station to allow for integration.	Existing Taxi Rank on Sillogue Road located adjacent to station to allow for integration.
Collins Avenue Station	Vehicular access to church at north end of station extinguished to provide cycle parking and safe pedestrian access to the station. Increased public space on Albert College Court while keeping access to church from this road.	Cycle parking will be provided and cycle lane provided along Ballymun Road by Bus Connects.	Location of Proposed Bus Connects stop located adjacent to station to allow for integration.	No Facilities
Griffith Park Station	Station entrance at the existing entrance gates to Whitehall College with an increased public space to ensure safe access and egress.	Cycle lanes are being provided along Mobhi Road to access station, to tie in with Bus Connects cycle lane proposals.	Location of Proposed Bus Connects stop located adjacent to station to allow for integration.	No Facilities
Glasnevin Station	Pedestrian access will be provided via Phibsborough Road.	Cycle lanes are being provided along Phibsborough Road to access station, to tie in with Bus Connects cycle lane proposals.	Adjacent Bus Stops and Irish Rail station, In-station direct interchange between Irish Rail and the Project.	Disability Drop Off Facilities will be provided at this station.
Mater Station	Realignment of existing kerblines to facilitate a tie in with existing footpaths. In addition, a reduction in the width of Eccles Street to provide an enhanced public space at the station entrance.	Cycle access via existing cycle lanes.	Adjacent Bus Stop serving station.	No Facilities
O’Connell St Station	Access to the station to be provided via an entrance on the west side of the footpath on the west side of O’Connell Street. Additional pedestrian entrance at south west corner of station to Moore Lane and	Tie in with existing bicycle lanes surrounding the proposed station.	Adjacent Bus Stops and Luas Stop at station.	No Facilities

Station	Pedestrian Access	Bicycle Access	Public Transport	Other Vehicular Access
	proposed retail development.			
Tara St Station	Realignment of existing kerblines to facilitate a tie in with existing footpaths. In addition, a reduction in the width of Townsend Street and Poolbeg Street to provide an enhanced public space at the station entrance.	Two way cycle lane between George's Quay and station plaza will provide safe access to bike parking.	Adjacent Bus Stops and DART station, Interchange with MetroLink station.	No Facilities
St. Stephen's Green	Enhanced public space at the entrance to the station with enhanced pedestrian road crossings on St Stephen's Green East and St Stephen's Green North	Tie in with existing bicycle lanes surrounding the proposed station.	Adjacent Bus Stops and nearby Luas Stop to station.	No Facilities
Charlemont Station	Access to the station for pedestrians will be enhanced by an at grade pedestrian crossing on Grand Parade	Bike parking is provided and links to the existing cycle network around the proposed station.	Adjacent Bus Stops and Luas stop Interchange with MetroLink station.	No Facilities.

3. Plans and Policy

This section provides an outline of the relevant National, Regional and local land-use and transport planning policy which sets out the context for the proposed Project. The Preliminary Design Planning Policy Report (ML1-JAI-PLD-ROUT_XX-RP-Y-00020) can be referred to for the full planning context for the individual stations.

3.1 Overview of Policies

Table 3.1: Overview of Policies

National Level	
Policy	**Guidance**
National Planning Framework (DHPCLG 2018)	Traffic and Transport Assessment Guidelines (TII 2014)
National Development Plan 2021-2030 (DPER 2021)	Urban Design Manual: A Best Practice Guide (DHLGH 2009)
National Sustainable Mobility Policy (Department of Transport, 2022)	Design Manual for Urban Roads and Streets (Government of Ireland 2019)
National Investment Framework for Transport Ireland (DoT, 2021)	
Climate Action Plan 2019	
The Energy White Paper: Ireland's Transition to a Low Carbon Energy Future 2015-2030 (DCCAE 2015)	
National Cycling Policy Framework 2009-2020	
Regional Level	
Policy	**Guidance**
Regional Spatial and Economic Strategy for the Eastern and Midland Region 2019-2031 (EMRA 2018)	Greater Dublin Area Cycle Network Plan (NTA 2013)
Transport Strategy for the Greater Dublin Area 2016-2035 (NTA 2016)	Draft Greater Dublin Area Cycle Network Plan (NTA, 2021)
Draft Transport Strategy for the Greater Dublin Area 2022-2042 (NTA, 2022)	
Park and Ride Strategy Report (NTA, 2021)	
Local Level	
Policy	**Guidance**
Dublin City Development Plan 2016-2022 (DCC 2016a)	Dublin Airport Central Masterplan (FCC 2016)
Draft Dublin City Development Plan 2022-2028	Dublin Airport Local Area Plan (FCC 2019c)
Fingal County Development Plan 2017-2023 (FCC 2017a)	Grangegorman Strategic Development Zone Planning Scheme (DCC 2012a)
Draft Fingal County Development Plan 2023-2029 (FCC, 2022)	Dardistown Local Area Plan (FCC 2013)
Swords Masterplan (FCC 2019a)	Ballymun Local Area Plan (DCC 2017)
South Fingal Transport Study (FCC 2019b)	Barrysparks Local Area Plan (FCC 2017b)

Your Swords: An Emerging City, Strategic Vision 2035 (FCC 2008)	Fosterstown Local Area Plan (FCC 2010)
	Oldtown/Mooretown Local Area Plan (FCC, 2010)
	George's Quay Local Area Plan (DCC 2012c)
	Dublin City Local Economic and Community Plan 2016-2021 (DCC 2016b)
	The Heart of Dublin - City Centre Public Realm Masterplan (DCC 2016c)

3.2 National Policy

3.2.1 National Planning Framework 2040 (Department of Housing, Planning, Community and Local Government, 2018)

The National Planning Framework (NPF) 2040 was published in February 2018 and replaces the National Spatial Strategy. This statutory document sets out the long-term context for Ireland's physical development and associated progress in economic, social and environmental terms. The NPF will be underpinned by supporting policies and actions at sectoral, regional and local level. A number of National Strategic Outcomes are identified, such as Sustainable Mobility and Enhancing Regional Accessibility, and the role of public transport in delivering this.

The NPF has been informed by the Regional Spatial and Economic Strategy (RSESs), which supports the implementation of the proposed Project Ireland 2040 by providing a long-term strategic planning and economic framework for the development of the Eastern and Midland Region for the year 2031 and beyond.

Dublin is projected to grow significantly with at least an additional 290,000 people by 2040 to support a minimum population of 1.41million within the CSO defined City and Suburbs alone (National Planning Framework Table 2.1 The NPF at a Glance: Targeted Pattern of Growth 2040).

Some of the key transport growth enablers outlined in the NPF relevant to the development of the proposed Project include:

- Identification of large-scale regeneration areas for the provision of new housing and employment throughout the city and Metropolitan area and the measures required to facilitate them as integrated, sustainable development projects;
- Progressing the sustainable development of new greenfield areas for housing especially those on public transport corridors such as Adamstown, Cherrywood, Clonburris and Clongriffin;
- Determining a number of accessible locations for significant people intensive employment to complement the City Centre and dockland areas;
- Relocating less intensive land uses to outside the M50 ring and from the existing built up area;
- Delivering the key rail projects set out in the Transport Strategy for the Greater Dublin Area including MetroLink, DART Expansion, and the Luas Green Line link to MetroLink;
- Measures to enhance and better link the existing network of green spaces including the Phoenix Park and other parks, Dublin Bay and the canals;

- Improving access to Dublin Airport to include improved public transport access, connections from the road network from the west and north and in the longer-term, consideration of heavy rail access to facilitate direct services from the national rail network in the context of potential future electrification (National Planning Framework, p37).

3.2.2 National Development Plan 2021-2030 (Department of Public Expenditure and Reform, 2021)

In the wake of the Covid-19 pandemic, the National Development Plan 2021-2030 acknowledges the ‘direct role’ infrastructure plays ‘in stimulating economies and maintaining employment.’ The revised National Development Plan sets out the ten-year capital ceilings to 2030 which will support economic, social, environmental and cultural development across all parts of the county under Project Ireland 2040, in parallel with the National Planning Framework.

The National Development Plan 2021-2030 ‘represents a step-change in the Government’s commitment to transitioning to a low carbon and climate resilient society’, with efforts made ‘to ensure that the National Development Plan will support the Government’s climate ambitions.’

The Plan recognises that ‘major progress in decarbonising the [transport] sector is a prerequisite for achieving Ireland’s 2030 climate targets.’ As such, National Strategic Objective 4 is dedicated to ‘Sustainable Mobility’ with the Project listed as a measure to facilitate the transition to sustainable mobility. This is in line with the Sustainable Mobility Policy, and the National Investment Framework for Transport in Ireland which will set out the prioritisation for future investment in the land transport network to support the delivery of the National Planning Framework.

The Project is included as one of the National Development Plan’s Strategic Investment Priorities. The Plan states that ‘MetroLink is likely the largest ever public investment project in the history of the State and [the] Government is committed to is funding and delivery as quick as possible.’

Box 9.1: MetroLink

Current Status: Preliminary Business case

Estimated Cost Category: F

Estimated Completion Date: TBC

MetroLink is the largest investment project in this NDP and likely the largest ever public investment project in the history of the State.

Once completed MetroLink will provide a sustainable, safe, efficient, integrated and accessible public transport service between Swords, Dublin Airport and Dublin City Centre. This new link will form a key spine of the overall integrated public transport system for Dublin, alongside BusConnects and DART+, and facilitate compact, transport-led development at key locations. During peak periods MetroLink will operate every three minutes in its early years and is ultimately designed to operate every 90 seconds when demand levels require this frequency.

During construction it is estimated that MetroLink will support approximately 8,000 direct construction jobs, while once in operation it will carry around 53million passengers in its opening year and create new connections between 127 schools, three Third Level institutions and five hospitals.

Since 2018 the project has undergone two extensive non-statutory public consultation processes, during which thousands of submissions were received and considered. Those public consultation periods have helped inform the development of the Preferred Route, which is now being readied for submission to An Bord Pleanála for statutory planning approval, subject to Government approval in the coming months.

Figure 3.1 National Development Plan 2021-2030

3.2.3 National Sustainable Mobility Policy (Department of Transport, 2022)

The National Sustainable Mobility Policy provides an opportunity to change daily travel choices by making it easier for people to travel by more sustainable modes such as walking, cycling or public transport. The Policy ‘aims to support this modal shift between now and 2030, through infrastructure and service improvements, as well as demand management and behavioural change measures.’ The Government has made a commitment to a 51% reduction in carbon emissions by 2030 and to reach net zero by 2050. The Policy, alongside the Climate Action Plan, ‘will put in place measures to enable and encourage greater use of sustainable mobility and reduce private car journeys.’

The CSO's National Travel Survey (NTS) 2019 found that private car use remains the most frequent mode of travel accounting for 74% of all journeys compared to 14% of journeys by walking, 2% by cycling and 7% by bus and rail. In 2019, nearly 57% of journeys of less than two kilometres were by private car, highlighting the challenge in changing travel behaviour and encouraging people to make journeys by active travel and public transport rather than by private car, particularly for shorter journeys. There are geographic variations to national figures with pronounced differences in active travel and bus and rail journeys in urban and rural areas, as shown in Figure 3.2.

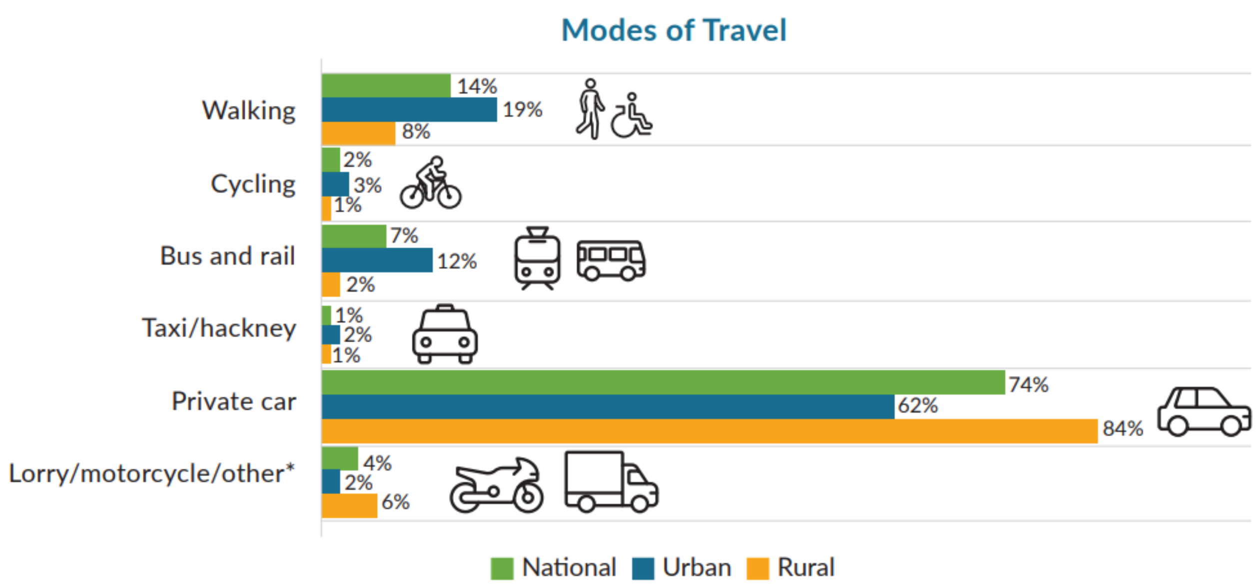

Figure 3.2: CSO's National Travel Survey 2019 (National Development Plan 2021-2030)

3.2.4 Investing in our Transport Future: Strategic Investment Framework for Land Transport, (DTTaS 2015)

The Strategic Investment Framework for Land Transport identifies key priorities and principles for future investment in transport. The main priority for future investment identified will be maintenance of the strategically important elements of the land transport system. The second priority identified is to address urban congestion and improve the efficiency and sustainability of the urban transport system in the Greater Dublin Area. The response will focus on improved and expanded public transport capacity, improved and expanded walking and cycling infrastructure, the use of Intelligent Transport Systems (ITS) to improve efficiency and sustainability and to increase capacity and on demand management measures. The third priority seeks to maximise the contribution of land transport networks to our National development and specifically refers to the improvement of connections to key airports.

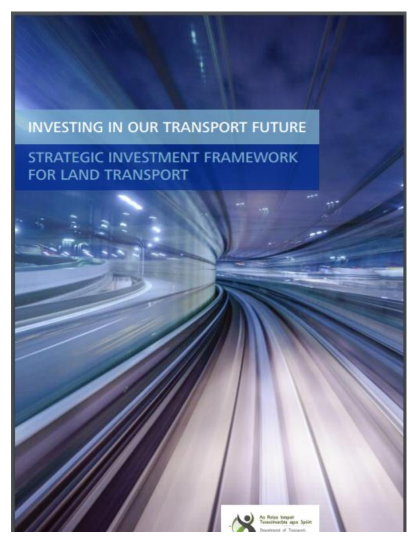

Figure 3.3: Investing In our Transport Future

3.2.5 Stability Programme Update 2022

The Stability Programme Update 2022 incorporates the Department of Finance's Spring Forecasts. The Update considers both short-term and long-term economic outlooks following the Covid-19 pandemic, as well as noting that 'climate policy and the corresponding actions needed to reduce emissions by 50% by 2030 and transition to net zero by 2050 will have macroeconomic and fiscal implications.'

3.2.6 Climate Action Plan 2021

The Climate Action Plan 2021 (Government of Ireland 2021) sets out at a national level how Ireland is to halve its emissions by 2035 (51% reduction) and reach net zero no later than 2050. The Climate Action Plan is a road map to delivering Irelands climate ambition. There are 475 actions identified that extend to all sectors of the economy aiming to transform Ireland into a low carbon nation over the next three decades.

In regard to modal shift the Climate Action Plan 2021 sets out that:

'The proposed pathway in transport is focused on accelerating the electrification of road transport, the use of biofuels, and a modal shift to transport modes with lower energy consumption (e.g. public and active transport)'. [Emphasis added]

Promoting more sustainable travel modes is seen as critical for climate policy. It offers an opportunity to 'improve our health, boost the quality of our lives, meet the need of our growing urban centres and connects our rural, urban and suburban communities'.

The key targets to meet the emissions reduction include:

- *'Provide for an additional 500,000 daily public transport and active travel journeys';*
- *'Develop the required infrastructural, regulatory, engagement, planning, innovation and financial supports for improved system, travel, vehicle and demand efficiencies'; and*
- *'Reduce ICE kilometres by c. 10% compared to present day levels'.*

ICE reduction measures include:

- *'Reallocating road space from the private car to prioritise walking, cycling and public transport';*
- *'Enhancing permeability for active travel'; and*
- *'Delivering safer walking and cycling routes to encourage greater uptake of active transport.'*

"Expanding rail services and infrastructure in, and around, major urban centres" is identified as part of the major transport projects that will help to deliver the 500,000 additional sustainable journeys. A key goal of the plan is to provide citizens with reliable and realistic sustainable transport options. The Climate Action Plan further states

'The new approach to public transport will be based on a vision of an integrated public transport network, enabling short, medium and long distance trips for people in every part of Ireland. This will mean increasing the frequency of existing rail and bus services, and expanding the bus network through the Connecting Ireland approach.'

3.3 National Guidance

3.3.1 Transport Infrastructure Ireland Traffic and Transport Assessment Guidelines (Transport Infrastructure Ireland, 2014)

A Traffic and Transport Assessment is a review of all the potential transport impacts of a proposed development or re-development, with an agreed plan to mitigate any adverse consequences. All new developments will generate trips on the existing transport network, either by car, commercial vehicle, cycling, walking or public transport. In cases where a proposed development is of a size or type that would generate significant additional trips on adjoining transport infrastructure, this additional demand may necessitate changes to the road layout or public transport service. It is essential that the developer or promoter should provide a full and detailed assessment of how the trips to and from the development might affect the transport network. The assessment should be an impartial description of the impacts of the proposed development and should outline both its positive and negative aspects.

The TII Traffic and Transport Assessment Guidelines provides a framework to promote an integrated approach to development, ensuring that proposals promote more efficient use of investment in transportation infrastructure which reduces travel demand and promotes road safety.

3.3.2 Design Manual for Urban Roads and Streets (DTTAS, 2013)

The Design Manual for Urban Roads and Streets (DMURS) promotes an integrated street design approach within urban areas (i.e. cities, towns and villages) focused on:

- Influence by the type of place in which the street is located; and
- Balancing the needs of all users.

A further aim of this Manual is to put well designed streets at the heart of sustainable communities to promote access by walking, cycling and public transport.

The principles, approaches and standards set out in this Manual apply to the design of all urban roads and streets (with a speed limit of 60 km/h or less), except: (a) Motorways (b) In exceptional circumstances, certain urban roads and streets with the written consent of Sanctioning Authorities.

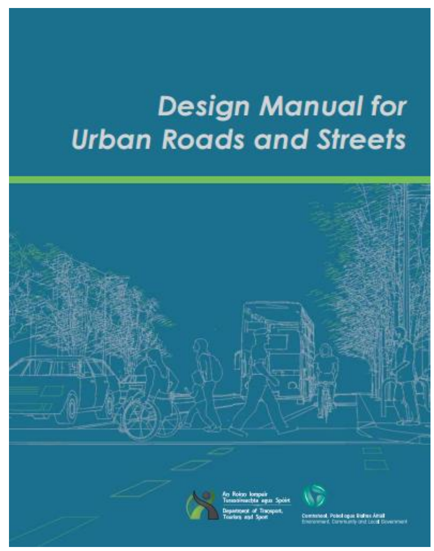

Figure 3.4: Design Manual for Urban Roads and Streets

The Manual is underpinned by a holistic design-led approach, predicated on a collaborative and consultative design process. There is specific recognition of the importance to create secure and connected places that work for all, characterised by creating new and existing streets as attractive places with high priority afforded to pedestrians and cyclists while balancing the need for appropriate vehicular access and movement.

3.4 Regional Plans and Policy

3.4.1 Regional Spatial and Economic Strategy for the Eastern and Midland Region 2019-2031

The principal purpose of the Regional Spatial and Economic Strategy (RSES) 2019-2031 is to support the implementation of the proposed Project Ireland 2040 through the NPF, the NDP and the economic policies by providing a long-term strategic planning and economic framework for the development of the Region. The RSES represents the regional tier for planning policy and provides a vision; a spatial plan and investment framework to shape future development of the Eastern and Midland Region to the year 2031. There are also sub-regional planning functions; Strategic Planning Areas. The RSES was formally adopted June 2019 by the Eastern and Midland Regional Assembly and replace the previous Regional Planning Guidelines for the Greater Dublin Area 2010-2022.

The RSES provides key principles for environmental, economic and social of the region These principles are:

- Healthy Placemaking – to create healthy and attractive places to live, work and study;
- Climate Action – to enhance climate resilience and accelerate a transition to a low carbon economy; and
- Economic Opportunity – to create the right conditions and opportunities for the region to realise sustained economic growth and employment that ensures good living standards for all.

The Strategy develops Regional Strategic Outcomes (RSOs) that are aligned to the principles above. These are aligned to the United Nations Sustainable Development Goals, EU thematic objectives and the National Planning Framework.

The RSOs relevant to the proposed Project and the principles to which each is aligned, are:

- Number 2 - Compact Growth and Urban Regeneration - ‘Healthy Placemaking’;
- Number 4 - Healthy Communities - ‘Healthy Placemaking’;
- Number 6 - Integrated Transport and Land Use - ‘Climate Change’;
- Number 9 - Support the Transition to Low Carbon and Clean Energy - ‘Climate Change’;
- Number 14 - Global City Region - ‘Economic Opportunity’; and
- Number 15 – Enhanced Strategic Connectivity - ‘Economic Opportunity’.

The guidelines include the development of a Metropolitan Area Strategic Plan (MASP) for Dublin. The MASP is aligned with other Regional Strategic Outcomes to deliver sustainable, compact regeneration and growth in the Dublin Metropolitan area to promote Dublin as a global city region. The proposed Project is identified as a key project to deliver the vision for the Dublin Metropolitan Area through achieving the Guiding Principle of Integrating Transport and Land Use, targeting growth along high quality public transport corridors and nodes:

“The development of the proposed MetroLink project, which is subject to appraisal and delivery post 2027, will unlock significant long-term residential development capacity in Swords and Swords-Lissenhall and can support economic growth in future Metro Economic Zones in South Fingal and at Dublin Airport, subject to the protection of airport capacity and accessibility. The proposed MetroLink route will continue via the City Centre and onwards

to Sandyford using the existing LUAS Greenline and the proposed upgrading of this line will support new and emerging districts in the south county at Sandyford, Cherrywood and Ballyogan."

REGIONAL POLICY OBJECTIVES:

MASP Sustainable Transport

RPO 5.2: Support the delivery of key sustainable transport projects including Metrolink, DART and LUAS expansion programmes, Bus Connects and the Greater Dublin Metropolitan Cycle Network and ensure that future development maximises the efficiency and protects the strategic capacity of the metropolitan area transport network, existing and planned.

RPO 5.3: Future development in the Dublin Metropolitan area shall be planned and designed in a manner that facilitates sustainable travel patterns, with a particular focus on increasing the share of active modes (walking and cycling) and public transport use and creating a safe attractive street environment for pedestrians and cyclists.

Figure 3.5: MASP Regional Policy Objective for Sustainable Transport

3.4.2 Regional Planning Guidelines for the Greater Dublin Area 2010-2022 (The Regional Planning Guidelines Office, 2010)

The Greater Dublin Area (GDA) includes the geographical area of Dublin City, Dun Laoghaire-Rathdown, Fingal, South Dublin, Kildare, Meath, and Wicklow and incorporates the regions of both the Dublin Regional Authority and the Mid-East Regional Authority. The Planning and Development Act, 2000 requires these regional authorities to make Regional Planning Guidelines in respect of the whole of the combined area of their regions, to provide a strategic planning framework for the long-term sustainable development of the area for the 12-year period up to 2022. The Regional Planning Guidelines (RPGs) is a policy document which aims to direct the future growth of the Greater Dublin Area over the medium to long term. It achieves this through appraisal of the critical elements involved in ensuring sustainable and good planning, and though the protection of sensitive and environmentally important locations. The RPGs inform and direct the City and County Development Plans of each of the Councils in the Greater Dublin Area.

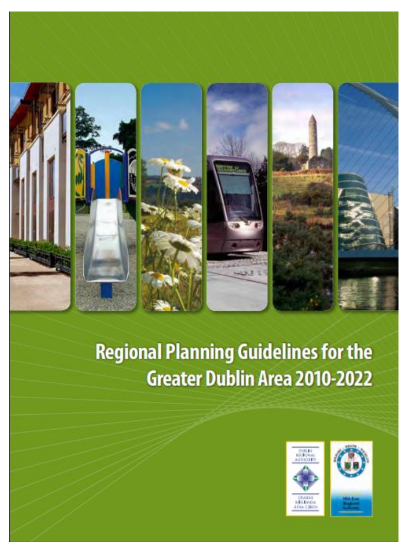

Figure 3.6: Regional Planning Guidelines for the GDA 2010-2022

The Regional Planning Guidelines for the GDA note that a series of transport projects are identified in national policy for future development, including development of the Project.

National transport and planning policy set ambitious targets for modal shifts in travel patterns to 'greener transport' and a requirement for shorter travel and more sustainable commuting patterns. In order to achieve this, a number of measures are identified to direct and integrate land use with investment in public transport:

- Focusing new development into sustainable compact urban areas served by high capacity and well-developed public transport systems;
- Integration of both systems and services across public transport networks;
- Improving choice and opportunities for reduced car travel by rural communities;
- Promotion of higher densities for employment uses around public transport nodes;
- Protection of identified and future possible public transport corridors;

The GDA RPGs also note that a high-capacity public transport system between the city area and Dublin Airport should be developed and Metro North (now called MetroLink) is named as a proposed strategic investment for the GDA.

3.4.3 Transport Strategy for the Greater Dublin Area 2016 – 2035 (National Transport Authority, 2016)

The Transport Strategy for the Greater Dublin Area (GDA) sets out a framework for the planning and delivery of transport infrastructure and services in the GDA during the years 2016 to 2035. The purpose of this strategy is to 'contribute to the economic, social and cultural progress of the Greater Dublin Area by providing for the efficient, effective and sustainable movement of people and goods.' The NTA undertook an appraisal of transport patterns and future demand across a series of corridors.

The proposed Project alignment lies within 'Corridor A', and this corridor was assessed for existing and future travel patterns and demands, and the following was identified:

- The car mode share for all trip purposes is 72%
- The public transport mode share for all trip purposes is 12%
- There is a significant amount of population and employment growth planned for the larger urban areas within this corridor, including Swords, Balbriggan, South Drogheda, Clongriffin, Ballymun, Donabate and Airport Environs.
- The National Road Authority's (now Transport Infrastructure Ireland) 'National Roads Traffic Management Study' identifies this corridor as having among the highest forecast growth in transport demand up to 2025 but there is limited scope for road development along this corridor.
- With the limited scope for further development of the road network in this area, it will be necessary for an anticipated growth in trips to be catered for by public transport.

From assessment of existing and future travel need within each corridor, the GDA Transport Strategy identified the most appropriate transport modes and integrated transport network solutions to be implemented in order to meet demand. The strategy also identified the provision of a strategic Park and Ride at Lissenhall.

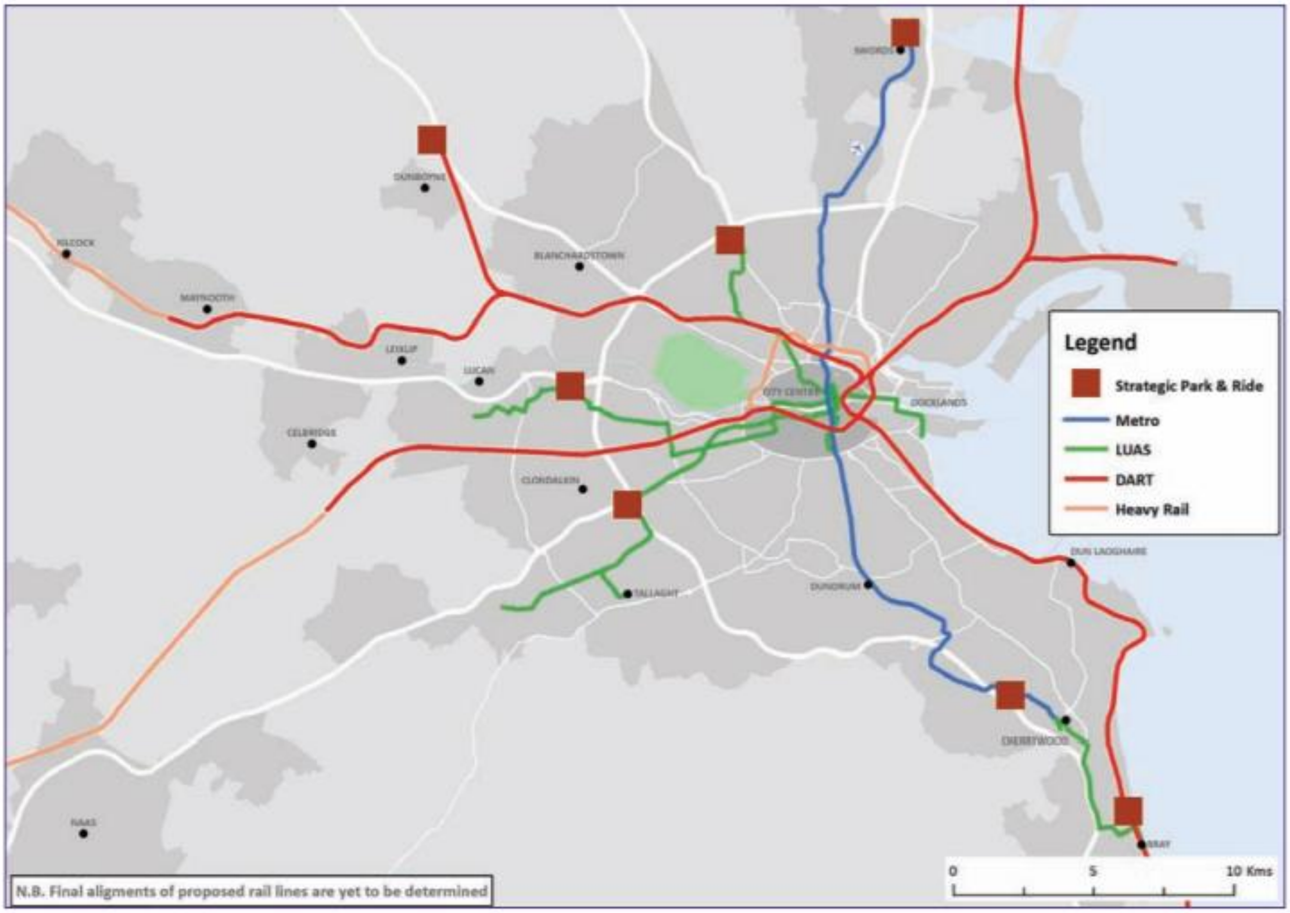

Figure 3.7: 2035 Strategic Park and Ride Facilities

3.4.4 Draft Transport Strategy for the Greater Dublin Area 2022-2042

The NTA have published a draft of the Transport Strategy for the GDA 2022-2042. The Draft GDA Transport Strategy 2022-2042 has been developed to be consistent with the spatial planning policies and objectives set out in the Regional Spatial and Economic Strategy (RSES). The Draft Strategy is also based on national policies on sustainability as set out in climate action and low carbon legislation, and in climate action plans. The potential impacts of the on-going Covid-19 pandemic, beyond the short-term, have also been taken into account. As part of the Draft Strategy, a Draft GDA Cycle Network Plan (2021) has been prepared, as well as a Park and Ride Strategy (2021).

The proposed transport schemes included in the Draft Strategy broadly align with the current adopted version, with the exception of Luas extensions pre- and post-2042. The current 2016-2035 Strategy continues as the adopted policy until the new Draft Strategy is adopted. As such, the adopted Strategy remains the basis for the modelling works carried out as part of the assessment in the EIAR.

3.5 Local Plans and Policy

The following sections present a selection of the local plans and policies that have specific relevance to traffic and transport.

3.5.1 Dublin City Council Development Plan (2016 – 2022) (Dublin City Council, 2016)

The Dublin City Development Plan aims to provide an integrated spatial framework to develop the city in an inclusive way to improve the quality of life for the citizens and to ensure Dublin City is an attractive place to live and work.

The Development Plan aims to apply the following principles from plan making to urban projects and development management:

- Economic: Developing Dublin as the national gateway at the heart of the Dublin region and the engine of Irish economy, with a network of thriving spatial and sectoral clusters, are a focus for employment and creativity.
- Movement: helping to build an integrated transport network and encouraging the provision of greater choice of public transport active travel.

The Development Plan also includes a number of specific policies and objectives which are of relevance to the proposed Project:

- Section 8.5.3 – Public Transport. "DCC policy on public transport will be implemented in collaboration with the NTA's Transport Strategy for the Greater Dublin Area 2016–2035. Key public transport elements of this strategy include: Metro North and South (now called MetroLink), and the DART expansion programme including DART underground".
- MT3 – It is the Policy of Dublin City Council "To promote and facilitate the provision of MetroLink, all heavy elements of the DART Expansion Programme including DART Underground (rail interconnector), the electrification of existing lines, the expansion of Luas, and improvements to the bus network in order to achieve strategic transport objectives".

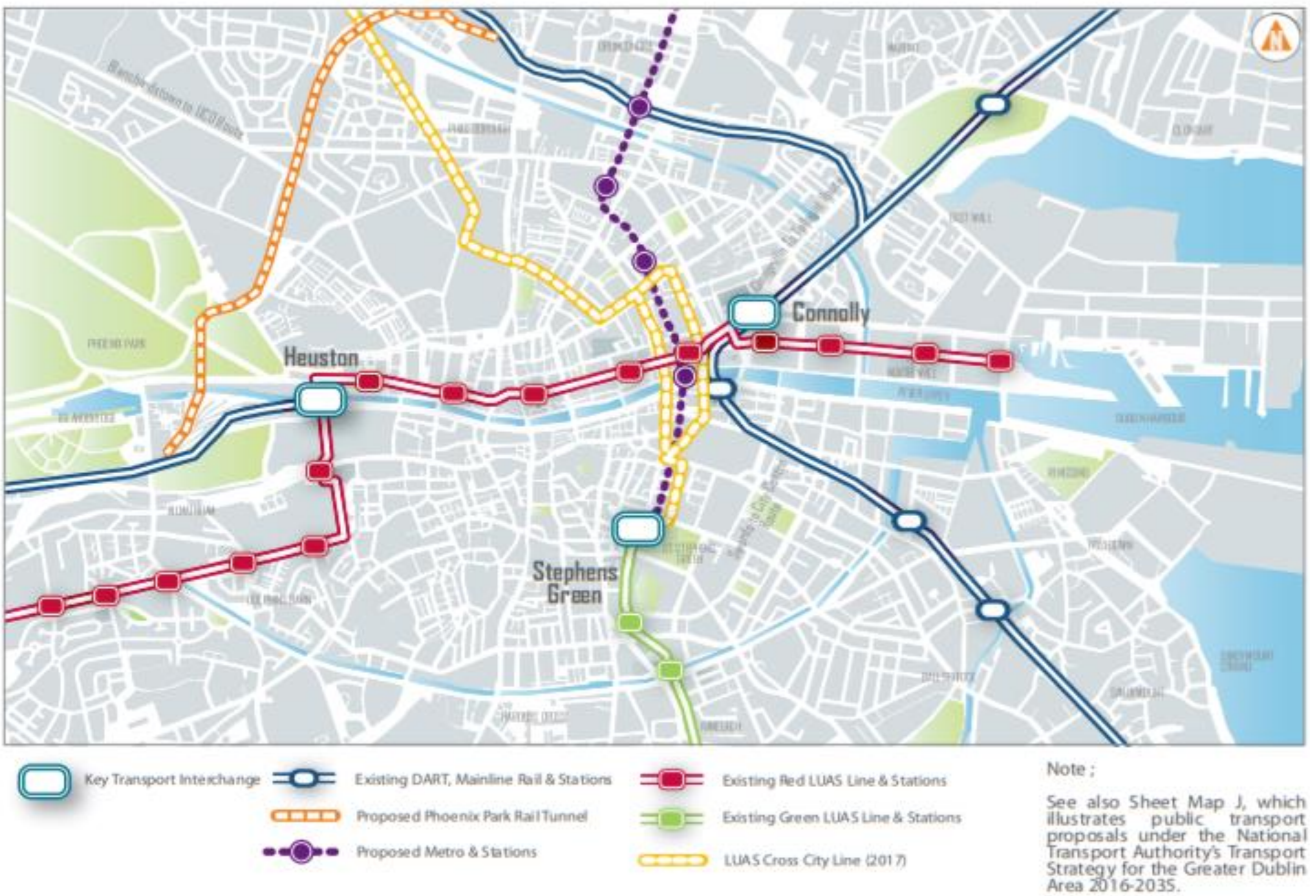

Figure 3.8: Proposed City Centre Integrated Transport

The development plan also mentions Land Use Zoning which are derived from its 'Core Strategy' which seeks to ensure a balanced approach to land-use zoning whilst ensuring the necessary services including public transport facilities are in place to support planned growth. In addition, there are also a number of Local Area Plans within the study, such as Ballymun Local Area Plan and George's Quay Local Area Plan which are detailed in the relevant station specific TTA reports.

3.5.2 Draft Dublin City Development Plan 2022-2028 (Dublin City Council, 2021)

Dublin City Council is reviewing the current Dublin City Development Plan 2016-2022 and preparing a new City Development Plan up to 2028. Building on the objectives of the Dublin City Council Development Plan 2016-2022, the Draft Dublin City Council Development Plan 2022-2028 recognises the opportunities presented by the Project to achieve effective integration of land-use and transportation in the area.

SMT20: Key Sustainable Transport Projects:

- To support the expeditious delivery of key sustainable transport projects including MetroLink, BusConnects, DART+ and Luas Expansion Programme so as to provide an integrated public transport network with efficient interchange between transport modes, serving the existing and future needs of the city and region.

In addition, the Draft Plan highlights the role the Project will play in delivering opportunities for developing the public ream around proposed stations.

3.5.3 Fingal County Council Development Plan (2017 – 2023) (Fingal County Council, 2017)

The aim of the Fingal County Council Development Plan is to 'plan for and support the sustainable long-term development of Fingal as an integrated network of vibrant socially and economically successful urban settlements and rural communities, strategic green belts and open countryside, supporting and contributing to the economic development of the County and of the Dublin City Region'.

In addition of being consistent with the National Spatial Strategy, the plan is also influenced by the housing and population targets set in the Regional Planning Guidelines for the GDA 2010 – 2022 and the Fingal County Council Development Plan 2011 – 2017. Framed on these, the plan focuses on consolidating already zoned lands and making the most efficient use of available and proposed infrastructure through the promotion of land use policy and transport planning integration.

Figure 3.9: Fingal Development Plan

In order to meet growth objectives for Swords, the plan proposes the development of a strategic land bank at Lissenhall in anticipation of the implementation of the Metro North (now called MetroLink). The land bank is approximately 221 hectares with a capacity to deliver approximately 7,000 residential units, 'for the development of a sustainable, vibrant, attractive and well-connected mixed-use urban district'.

In addition to the above, there is a significant potential development in Swords in the vicinity of the Metro Economic Corridor, which is the proposed expansion of the Pavilions Shopping Centre adjacent to the R132 The Pavilions Phase 3 Scheme allows for the development of 277,637m² of mixed-use development including provision for connectivity to the Swords Metro Quarter Area on the R132.

The Zoning Strategy defines land use classes and establishes objectives and vision for each one. Zoning classes relevant to the proposed Project are:

- Zoning Objective 'ME' Metro Economic Corridor: 'Provide for an area of compact, high intensity/density, employment generating activity with associated commercial and residential development which focuses on the Metro within a setting of exemplary urban design, public realm streets and places, which are permeable, secure and within a high-quality green landscape. The designated areas will form sustainable districts which possess a high degree of connectivity and accessibility'.

Within the Key Economic Challenges included in the Developing Plan the provision of transport infrastructure is highlighted as a way to 'ensure that employment generating lands are easily accessible by good quality public transport networks, in particular that there is an accessible public transport system to serve Swords and the Airport'.

Specific policies and objectives which relate to the proposed Project:

- Under Section 1.6, Strategic Policy, the Development Plan seeks to: ‘seek the development of a high quality public transport system throughout the County and linking to adjoining counties, including the development of the indicative route for New Metro North (now called MetroLink) and Light Rail Corridor, improvements to railway infrastructure including the DART Expansion Programme, Quality Bus Corridors (QBCs) and Bus Rapid Transit (BRT) systems, together with enhanced facilities for walking and cycling; and Promote, improve and develop a well-connected national, regional and local road and public transport infrastructure system, geared to meet the needs of the County and the Region, and providing for all road users, prioritising walking, cycling and public transport.’

Fingal County Council is currently in the process of preparing a new Development Plan for 2023-2029, to set a longer term vision for the county’s future. It is anticipated that the preparation process will be complete in late March 2023.

The specific policies and objectives relevant for the stations in Fingal County Council, are detailed further in the station specific TTA reports.

3.5.4 Draft Fingal County Council Development Plan 2023-2029 (Fingal County Council, 2021)

The Draft Fingal Development Plan 2023-2029 is underpinned by a strategic vision intended to guide the sustainable future growth of Fingal. The Strategic vision has been prepared having regard to the National Strategic Outcomes of the National Planning Framework, the Regional Strategic Outcomes of the Regional Spatial and Economic Strategy, the UN Sustainable Development Goals, and the Fingal Corporate Plan 2019-2024.

Climate action is at the forefront of the Plan, with a focus on developing well-serviced and well-connected communities. The Plan aims for ‘reduced travel distances between home, work, education and services and enhanced active modal share, with an overall reduction in emissions.’ It is recognised that ‘the integration of land use and transport planning and aligning policies are key elements of [the] Plan.’

The Plan notes ‘*the delivery of MetroLink in co-ordination with other transport proposals, including BusConnects, future Park & Ride facilities and enhanced electric vehicle charging infrastructure, are all crucial for the future sustainable development of Swords.’*

Policy CSP25-Consolidation and Growth of Swords is to ‘*promote and facilitate the long-term consolidation and growth of Swords as a Key Town including the provision of key enabling public transport infrastructure, including MetroLink, in accordance with the relevant provisions of the NPF, RSES and the MASP.’*

Policy CSP28- Promote and Facilitate MetroLink is to ‘*promote and facilitate the development of MetroLink, connecting Swords to the Airport and on to the City Centre.’*

3.5.5 Your Swords: An Emerging City, Strategic Vision 2035 (Fingal County Council)

'Your Swords, An Emerging City, Strategic Vision 2035' provides the background and assessment of options developed by Fingal County Council to support the future growth and development of Swords. This document was considered in the compilation of the Swords Masterplan.

The Strategic Vision ensures that Swords will incorporate and be synonymous with:

- A Green City – in terms of the physical landscape and sustainable environmental objectives.
- An Integrated Transport Strategy, comprising significant public transport services (including Metro North and local and regional bus services) and strategically important road infrastructure.

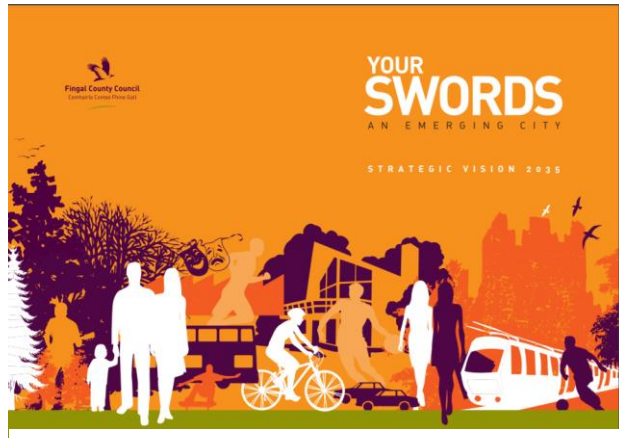

Figure 3.10: Your Swords

The study envisages the Metro North Economic Corridor (MNEC), along the Metro North alignment (now called MetroLink), facilitating opportunities for high-density, mixed-use and employment-generating activities, as well as for commercial and residential development. The designated sites for development will form sustainable districts with high connectivity and accessibility and will be provided with the necessary infrastructure.

3.5.6 Swords Masterplans Draft Masterplans for Barrysparks & Crowscastle; Fosterstown; & Estuary West (Fingal County Council, 2019)

The purpose of these masterplans is 'to provide Development Frameworks for the long-term sustainable development of major high-quality employment and residential quarters in Swords'.

The draft document refers to proposed Project as a high frequency and high-capacity railway system that will improve connectivity and enhance Sword's strategic role in the region, constituting a key driver for its future population and economic growth. The document also highlights that three of the four MetroLink stations proposed in Swords will serve the defined Masterplan lands, namely, Barrysparks, Crowscastle, Fosterstown and Estuary West. Among these, Barrysparks and Estuary West are classified as a 'Metro Economic Corridor zoning'.

On each masterplan, the Regional Modelling System (RMS) was used for the assessment of strategic transport schemes such as the Project. The model also evaluated the impact of different levels of parking for developments proposed along the Project corridor.

The draft identifies the following opportunities arising from the implementation of the Project in Swords:

- Provision of adequate pedestrian and cyclist access to MetroLink stations to encourage usage;
- Improvement of local bus services to feed MetroLink stations;
- Increase in residential densities in the proximities of the MetroLink corridor;
- Creation of public spaces and squares around MetroLink stations to form community hubs that comprise local amenities;

- Commercial development and new hotel along the R132 beside MetroLink corridor and Swords Main Street.

3.5.7 Dublin Airport Central Masterplan (Fingal County Council, 2016)

The Dublin Airport Central Masterplan (Fingal County Council, 2016) is a framework for the future development of lands strategically located adjacent to Dublin Airport. The lands associated with the masterplan comprise of two zones, referred to as zone 1 and zone 2. The masterplan focuses on the development of zone 1 for high quality, high value office accommodation supplemented with ancillary uses. The delivery and implementation of the development framework for the lands will be achieved in a gradual manner and will be linked to key infrastructural requirements and service supports; including road network, public transport network and water service improvements. Maps included in the Masterplan make provisions for the location of the Metro stop at Dublin Airport.

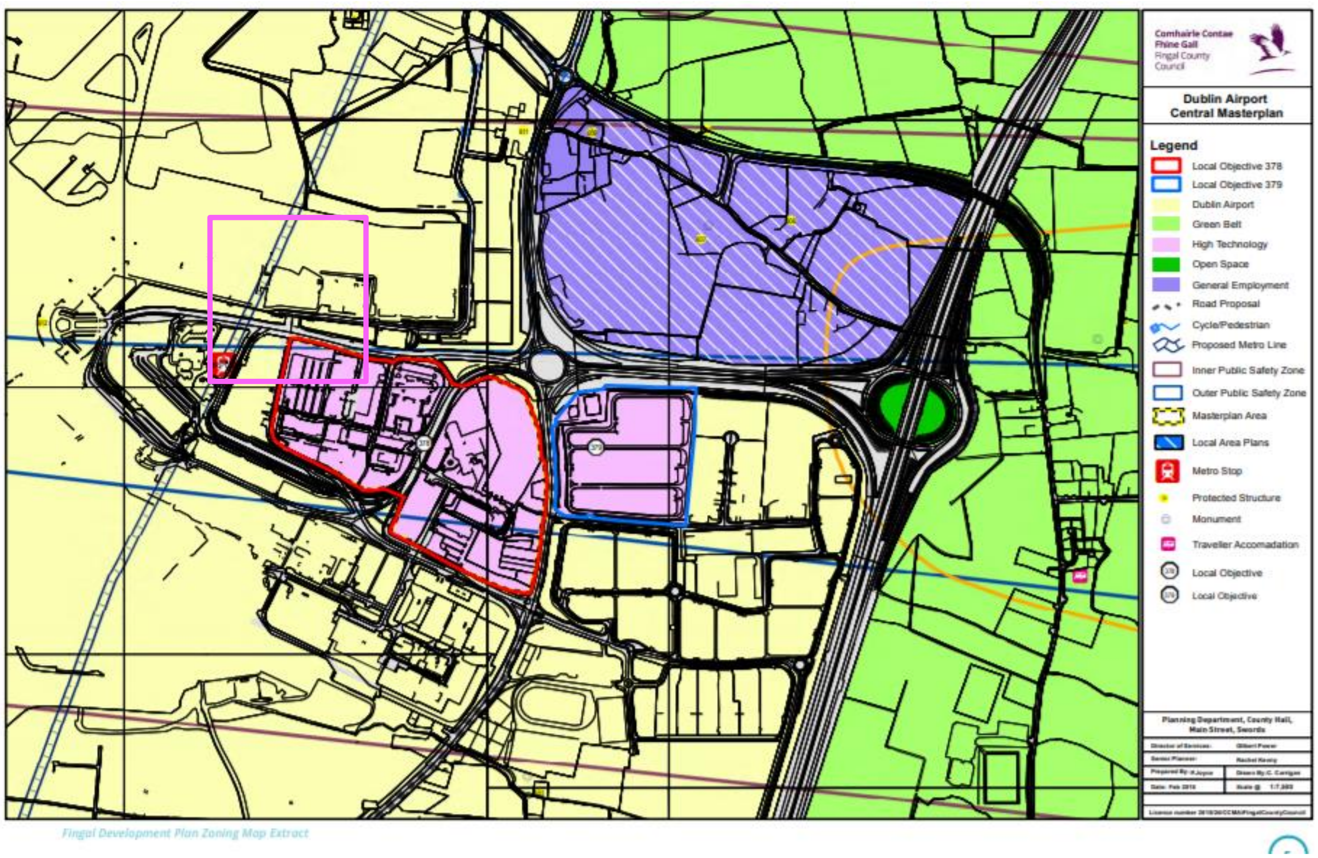

Figure 3.11: Map of Dublin Airport Central Masterplan

3.5.8 Dublin Airport Local Area Plan (Fingal County Council, 2020)

The Dublin Airport Local Area Plan was set to provide an updated strategy to guide the continued growth of the airport in line with the relevant aviation, planning and environmental policy within the context of a sustainable growth framework. The LAP provides a detailed planning framework to:

- Facilitate the capacity enhancements and operational improvements that are required within the short to medium term for Dublin Airport to:

  - Continue to operate safely and efficiently;
  - Keep pace with the anticipated growth in demand; and
  - Develop as a secondary European hub;

- Outlines the community, environmental and supporting infrastructure and surface access measures necessary to support Dublin Airport's growth, consistent with:
  - Sustainable development principles;
  - Appropriate noise and environmental measures designed to protect public health; and
  - Ensuring high quality surface transport access to Dublin Airport.

The LAP establishes as strategic vision to 'facilitate and manage the sustainable growth of Dublin Airport in a manner that reflects its status as Ireland's premier aviation gateway whilst safeguarding the core operational function of the airport and supporting neighbouring communities, the economy and the environment'.

The 'Growth and Connectivity' strategic objective in this LAP focuses on providing 'for the necessary airside and landside infrastructure to facilitate the projected increase in passengers over the life of the LAP whilst safeguarding for longer term growth'.

Special focus is given to the promotion of public transport and sustainable transport (walking and cycling) to facilitate trips from and to the Dublin Airport. The LAP recognises the contribution of the Project in achieving such objectives and the Fingal County Council is set to support main stakeholders and help facilitate the delivery of the Project so that it provides the best possible service for all users.

Key public transport and sustainable transport objectives defined in this LAP include:

- OBJECTIVE CY1: Provide cycle paths separated from traffic along the R132 between Pinnock Hill Roundabout and the boundary with Dublin City Council as part of the Swords Core Bus Corridor;
- OBJECTIVE CY2: All development proposals within the LAP shall be required to demonstrate provision of high-quality cycle facilities for employees, to include secure bike parking facilities, and changing and shower facilities to incentivise sustainable transport;
- OBJECTIVE PT1: Encourage and facilitate the provision of an integrated public transport network to serve Dublin Airport;
- OBJECTIVE PT2: Require the development of a transport interchange including a MetroLink station at the centre of the Dublin Airport campus, in accordance with the implementation of MetroLink by 2027 by the National Transport Authority and Transport Infrastructure Ireland;
- OBJECTIVE PT3: Ensure that the proposed MetroLink station and interchange in Dublin Airport campus is undertaken to best international standards for public transport interchanges;
- OBJECTIVE PT6: Investigate and provide for connections from the western parts of the airport campus to MetroLink, in the context of potential future planned development to the west of the existing terminals;
- OBJECTIVE PT9: Prioritise public transport and taxis on the external and internal road network;

- OBJECTIVE CP1: Facilitate a review of the location of bus/coach parking in front of Terminal 1 in conjunction with an analysis of new MetroLink Station, Terminal 2, and Kerb proposals, in order to provide for an efficient multi-mode transport interchange convenient to all airport users.

3.5.9 Grangegorman Strategic Development Zone Planning Scheme (Dublin City Council, 2012)

The Grangegorman Strategic Development Zone Planning scheme sets out the access strategy for the development and identifying possible measures which will mitigate against the transportation impacts of the development. It is an objective of the scheme to encourage motorists to use more sustainable modes of transport. A total of 6,119 additional public transport trips will be generated from the three development phases outlined in the scheme, and it is recognised in the scheme that the Project 'will directly improve services providing high-capacity public transport links.'

Figure 3.12: Grangegorman Planning Scheme: Transportation, Movement and Mobility

3.5.10 Dardistown Local Area Plan (Fingal County Council, 2013)

The Dardistown LAP lands are an important strategic development landbank located between Dublin City Centre and Dublin Airport comprising approximately 154 hectares. The vision for the LAP is 'To provide for a strategic employment node, comprising inter alia, research and development and high technology manufacturing, maximising opportunities presented by the lands strategic location well served by air, existing and planned high capacity public transport and the national road network, and all within a high quality sustainable environment'. The Dardistown LAP was developed around the provision of Metro North (now called MetroLink) and this is acknowledged in the key principles which have guided the development framework i.e. 'To preserve the Metro North, Depot and Metro West Schemes and to support the economic case for these schemes through the programmed development of the lands.' The plan itself facilitated not only a stop to serve the LAP lands but also a 3000-space park and ride and the Metro North Depot.

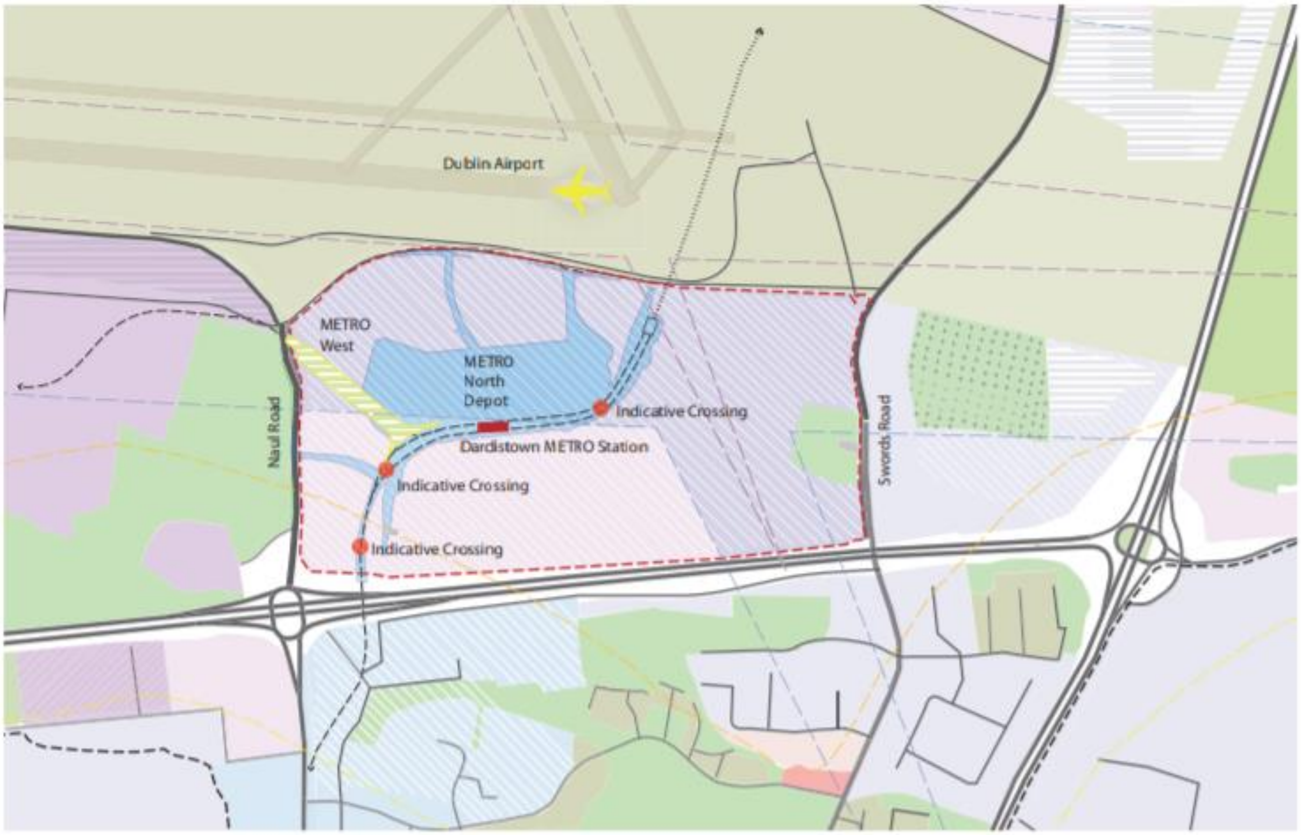

Figure 3.13: Reservations for Metro North (now MetroLink), Dardistown Stop, Metro North Depot & Metro West

3.5.11 Ballymun Local Area Plan 2017

The Ballymun Local Area Plan (LAP) is part of the Dublin City Council Development Plan 2016 – 2022. The LAP aims to facilitate the development of several key sites, and addresses issues related with infrastructure, economic development, public realm and community/sporting facilities to achieve a sustainable city neighbourhood.

The LAP notes the development of the proposed Project as 'an essential component of the regeneration process and attracting and delivering high density mixed-use developments along the Main Street and M50 lands.' Existing vacant lands constitute an opportunity to deliver high density schemes along the proposed Project alignment.

It is also highlighted that any rail line proposal along the Main Street should avoid segregating East and West Ballymun and should instead enhance permeability, in line with the overall objectives of the LAP.

3.5.12 George's Quay Local Area Plan

The proposed Tara Street Station is located within the George's Quay Local Area Plan (LAP) area, as part of the Dublin City Council Development Plan 2016-2022. The LAP aims to establish good permeability throughout the LAP area, making it a great place to live, work and visit.

Developments within the LAP area should seek to establish and/or enhance the network of pedestrian and cycle routes throughout the George's Quay LAP.

The overarching theme of the LAP is "*To deliver a quality movement infrastructure which prioritises public transport, walking and cycling, which manages an appropriate role for the private car and which underpins the livelihood and liveability of the George's Quay area and the city*."

The plan objectives therefore seek to;

- Reduce the speed differential between pedestrians, cyclists and vehicles through expansion of the city centre 30km/h zone.
- Improve general pedestrian infrastructure and priority at key crossing points and along priority routes.
- Improve and provide cycling infrastructure in line with the emerging citywide strategic cycle network along priority routes and in accordance with the Department of Transport's 'National Cycle Policy Framework'.

Objective 6 of the George's Quay LAP seeks to develop the Townsend Street route as an attractive and comfortable pedestrian and cycling route from Temple Bar to Grand Canal Dock.

The relevant movement and access policies for the George's Quay LAP includes:

- To support proposals for high quality private cycle parking facilities/clubs in close proximity to Tara Street Station.
- To require Travel Plans and Transport Assessments for all relevant new developments and/or extensions or alterations to existing developments.
- The quantity of car parking proposed for significant commercial development sites shall be significantly limited reflecting the highly accessible nature of the area via public transport.

The relevant movement and access objectives for the George's Quay LAP includes:

- To implement pedestrian infrastructure improvements to priority routes including pedestrian priority measures and additional and enhanced crossing facilities.
- To promote the campshires and Townsend Street as priority pedestrian routes providing connectivity between the city centre/retail core and the emerging cultural destination of Grand Canal Dock.
- To require minimum footpath widths of 5.5 metres to Tara Street and 3 metres to Poolbeg Street to provide for an improved public realm and enhanced pedestrian circulation at Tara Street Station.
- To seek, as part of an overall integrated City Centre Transport Strategy, the completion of a series of cycle infrastructure improvements for the Georges Quay area.

4. Study Area and Existing Conditions

4.1 Study Area

The Traffic and Transport study area includes the areas affected by the construction and operation of the proposed Project over its full operational length from Estuary, north of Swords to Charlemont, south of Dublin City Centre. The proposed Project is presented and assessed in the EIAR based on four distinct geographical areas:

- AZ1 Northern Section: Estuary Station to Dublin Airport North Portal (DANP). It includes the rail line crossing on viaduct over the Broadmeadow and Ward Rivers and associated flood plains. This section will include open retained cut and cut-and-cover sections. This section includes the proposed Park and Ride Facility at Estuary Station;
- AZ2 Airport Section: This section of the proposed Project includes DANP, the tunnel underneath Dublin Airport, Dublin Airport Station and Dublin Airport South Portal (DASP);
- AZ3 Dardistown to Northwood: From south of DASP to the Northwood Portal. This section includes the proposed Dardistown Depot, the M50 Viaduct and the construction compound at Northwood. This section will include open, retained cut and cut-and-cover sections; and
- AZ4 Northwood to Charlemont: From south of the Northwood Portal to the tunnel termination location south of Charlemont Station.

A summary of the stations within each geographical section can be found in Chapter 4 (Description of the MetroLink Project).

To determine the main area of influence, two baseline model runs have been carried out: one without the proposed Project, and one with the proposed Project in place. The public transport and highway outputs from these two runs have been compared to identify the area of influence of the proposed Project, and the results are provided in the 'Area of Influence' Technical Note (Appendix A9.1). The results indicate that traffic volumes increased to the north of the alignment when the proposed Project is in place, with a subsequent reduction in road traffic between Swords and Dublin. Changes in car trips also occurred on arterial routes around Dublin. Figure 4.1 displays the Project's area of influence. The main area of influence is in the north of Dublin and south Fingal, directly adjacent to the proposed Project due to the walking catchment of the stations. Given the proximity of the proposed Project to the counties in the north of Leinster and the access to the proposed Park and Ride, the area of influence extends north of the Park and Ride Facility. The area of influence also extends to the West and South of Dublin along major radial corridors, and the M50 due to opportunities to combine Luas Green Line trips with proposed Project and access the Kildare and Maynooth railway stations.

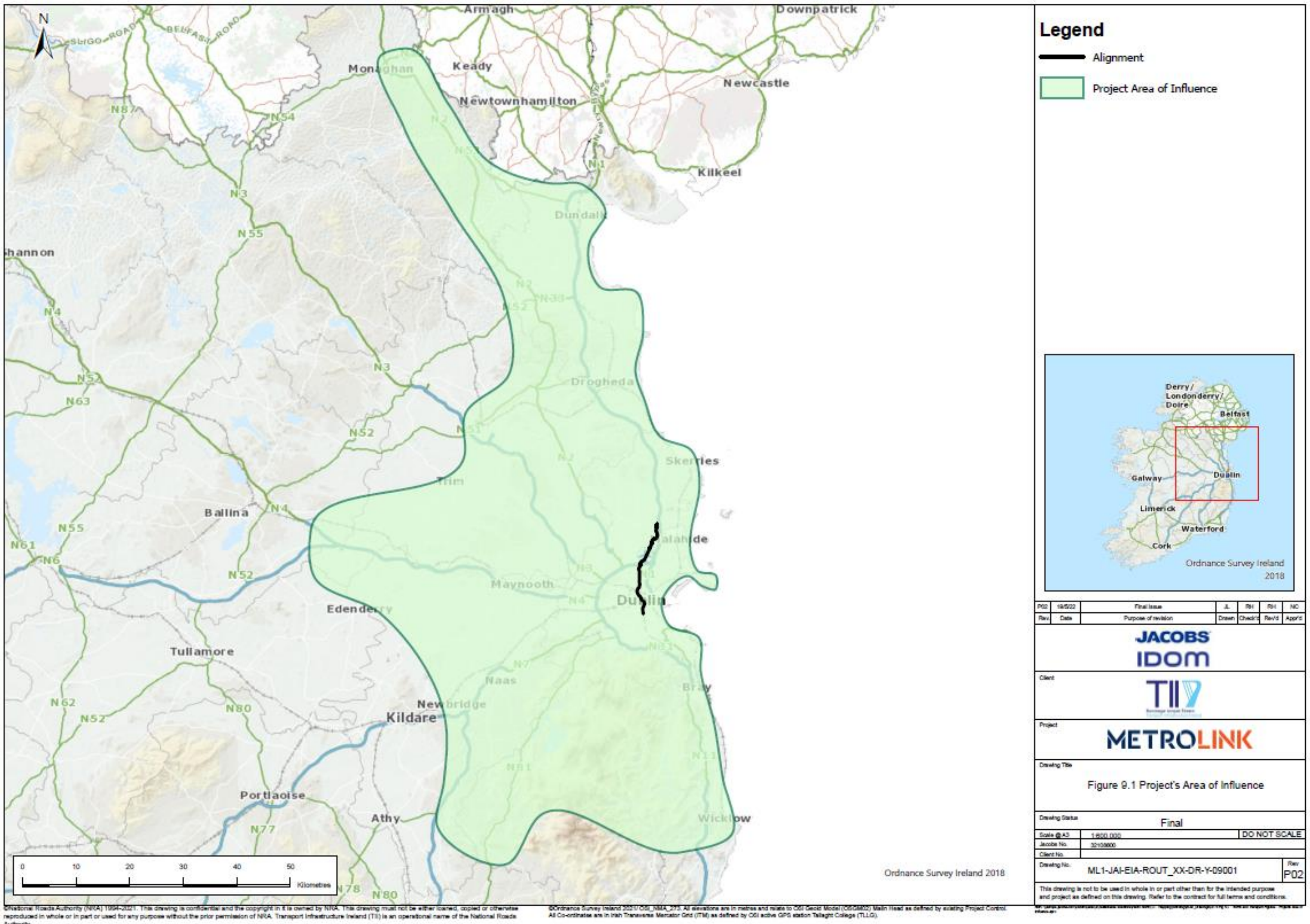

Figure 4.1: Project's Area of Influence

4.2 Baseline Conditions

This section details the baseline conditions at the local level of each station from north to south along the alignment. For each of the networks, the existing conditions are described, as well as noting the future receiving environment of each network before the proposed Project is implemented, acknowledging that this may differ from the baseline conditions in some cases, for example if there are planned changes to the road network in the short-term before the Project is constructed.

The baseline conditions (both existing and future receiving environment as described above) for the following networks have been described:

- Land Uses;
- Public Transport Network,
- Road Network;
- Cycle Network; and,

- Pedestrian Network.

4.2.1 Existing Land Uses

There are a broad range of different land uses in proximity to the proposed Project. These mostly comprise of residential and commercial lands, but some have specific transport, service, amenity, employment or sectoral functions.

4.2.1.1 Population and Jobs within the Study Area

Population and jobs data have been extracted from the Forecast Year 2019 Planning Data Sheets, received from the NTA. These data sheets are based upon the 2016 census information within Small Area Zones, to forecast growth in future years.

Figure 4.2 shows the population density per km^2 along the proposed Project alignment. In the northern section of the alignment, areas of a population density of 5,000-10,000 people per km^2 can be seen to the west of the alignment in the areas of River Valley and Applewood. Further along the alignment, areas of high population density of 25,000-50,000 people per km^2 can be seen around Ballymun and Mater stations, as well as in Dublin City Centre.

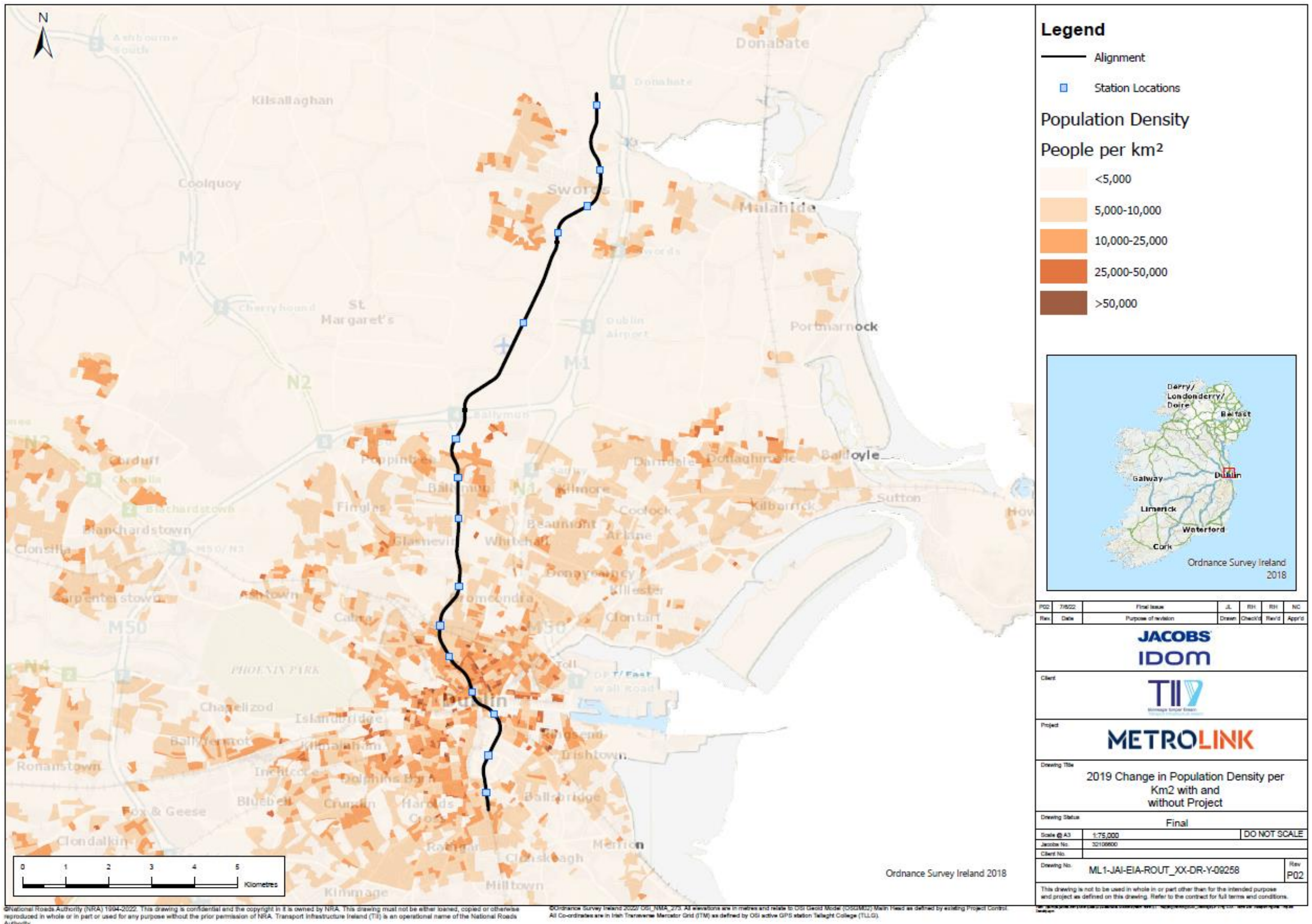

Figure 4.2: Population Density per Km² along Project Alignment – 2019

Table 4.1 presents the volume of people within the 30-minute modal catchments of the station, in 2019, as indicated by the Planning Datasheets. In the table, 'PT to Metro' and 'PT from Metro' are presented separately as it is often the case that the inbound services may take an alternative route to the outbound services. In all modes, the largest population lies within the 20-30minute catchment from the alignment. The 10-15minute catchment sees the second largest proportion of the population in all modes except for cycling, which has approximately 188,000 people within the 5-10minute catchment.

Table 4.1: Population within Journey Time from Alignment

Mode	0-5	0-10	0-15	0-20	0-30
Walking	12,340	64,820	123,928	181,019	**295,142**
Cycling	116,368	304,388	446,491	566,785	**790,236**
PT to Metro	50,283	180,781	347,366	505,743	**897,402**
PT from Metro	46,734	189,544	374,860	543,402	**941,980**

Figure 4.3 illustrates the walking catchments along the proposed Project alignment. In the total 30minute walking catchment of the alignment in 2019, there are over 295,000 people. The largest proportion of population falls within the 20-30minute catchment, with approximately 114,00 people.

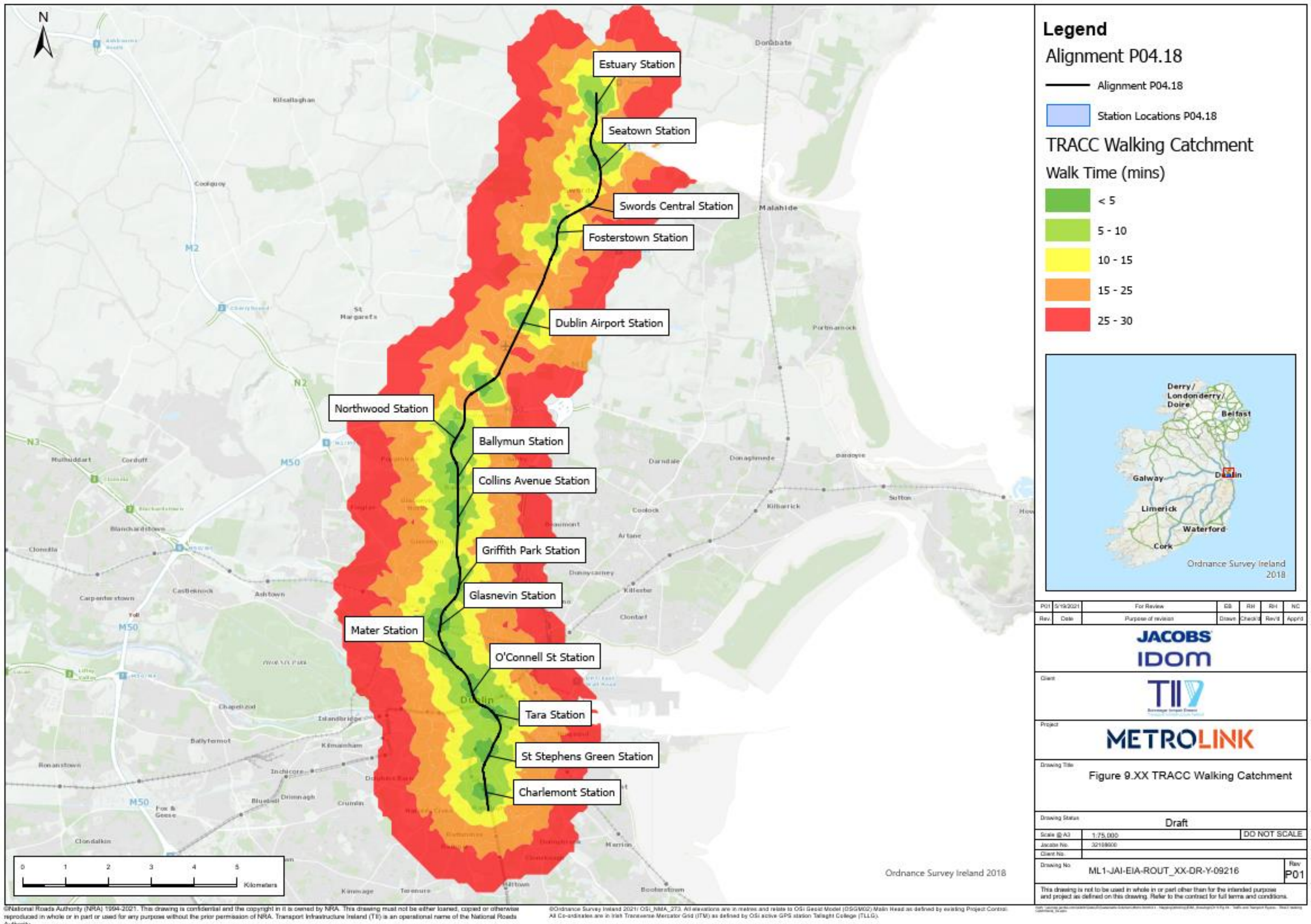

Figure 4.3: Walking Catchments from Stations along Project Alignment

Figure 4.4 illustrates the jobs density per km² along the proposed Project's alignment in 2019, as indicated by the Planning Datasheets. For much of the alignment, there are less than 50,000 jobs per km², however this increases in Dublin City Centre, with some zones showing greater than 50,000 jobs per km². In the City Centre, this high job density falls generally within the 10minute walking catchment from the stations. Whilst Dublin Airport has over 12,000 jobs in the total Small Area, the Small Area size in km is relatively large extending south beyond the M50, and therefore the density per km² is less than 5,000 in Figure 4.4

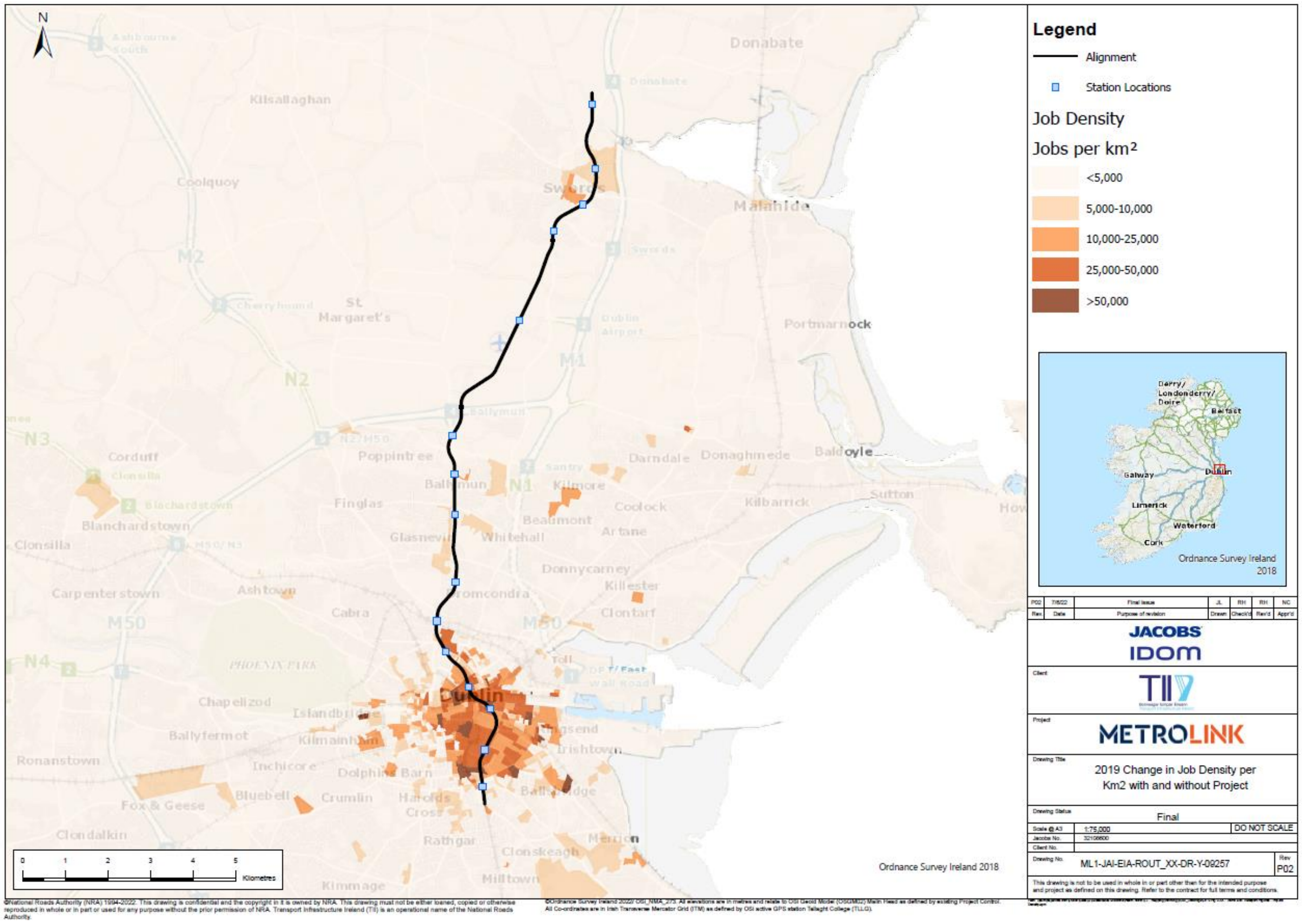

Figure 4.4: Job Density per Km² along Project Alignment – 2019

4.2.1.2 Future Receiving Environment

4.2.1.2.1 Planning Data Sheets

The NTA have provided Planning Datasheets for the years 2035, 2050 and 2065, that includes forecasts for key trip generation and destination variables such as:

- Population;
- Population by age cohorts;
- Population by school level (Primary, Secondary, Third Level);
- Principal Economic Status;
- Employment places at destination;
- Employment paces at destination by type (Health, Retail, Food Retail); and
- Education places at destination by level (Primary, Secondary, Third Level).

These planning sheets are the principal land use scenario for all plans and schemes. Interim year planning sheets for years between 2016 and 2040, are straight line interpolation between 2016 and 2040. For years after 2040, these planning datasheets are created by extending this straight-line interpolation onwards to the forecast year, such as 2050 or 2065.

Further details on the Planning Datasheets can be found in Chapter 11 (Population and Land Use).

4.2.1.2.2 Airport Passengers

In addition to the forecast growth associated with the typical land use patterns, Dublin Airport is a key growth driver in the corridor and has a different growth associated with flight travel demand. Within the ERM growth in landside demand is determined for passengers, staff and freight, applied to the Dublin Airport Special Zone. Freight and staff numbers are forecasted on a scaling factor, which will be aligned with passenger growth forecasts. DTTAS report "Review of Capacity Needs at Ireland's State Airports - August 2018" outlines forecast passenger growth to 2050 for Low, Central and High growth scenarios.

The baseline for the passenger numbers at Dublin Airport are obtained from the 2016-2019 CSO Aviation Stats' TAM05. The CSO stats are used to calculate the growth rate up to 2019 and the growth rate from 2020 to 2050 is determine by interpolation from the 2019 passenger forecast to the 2050 baseline passenger forecast contained within the DTTAS report.

The same annual growth rates have been applied for growth from 2050 to 2065.

4.2.2 Existing Public Transport Network

4.2.2.1 Bus

Dublin is served by Regional and Local Bus networks. Bus Eireann and Dublin Bus are the main providers of bus services in Ireland and in Dublin city. There is also a large number of licensed private bus services in Dublin who provide bus services within the city, such as the Swords Express, which operates 159 departures every weekday, offering a rapid coach service for the Swords and greater Fingal area.

Bus Eireann has an extensive Bus Network that runs through Dublin and connects towns in the Greater Dublin Area, and further afield, to the City and Dublin Airport.

Dublin Bus operates an extensive city bus network in Dublin with over 136 routes operated on a daily basis. The majority of the city bus services are radial routes to the City Centre. There are very few orbital bus routes in Dublin city. Bus Connects aims to improve the bus network in Dublin City by creating routes that are both radial and orbital and are focused on higher frequency and interchange.

Go Ahead runs a number of bus routes in Dublin on behalf of Transport for Ireland. These include the following services which are in the vicinity of the proposed Project alignment:

- 17a (from Blanchardstown to Kilbarrack)
- 33a (from Balbriggan/Skerries to Swords/Dublin Airport or Dublin City Centre)
- 33b (from Portrane to Swords)
- 75, 75a (from Tallaght to Dún Laoghaire)

- 102 (from Dublin Airport to Sutton Station)

Figure 4.5 illustrates the existing bus network within the Greater Dublin Area.

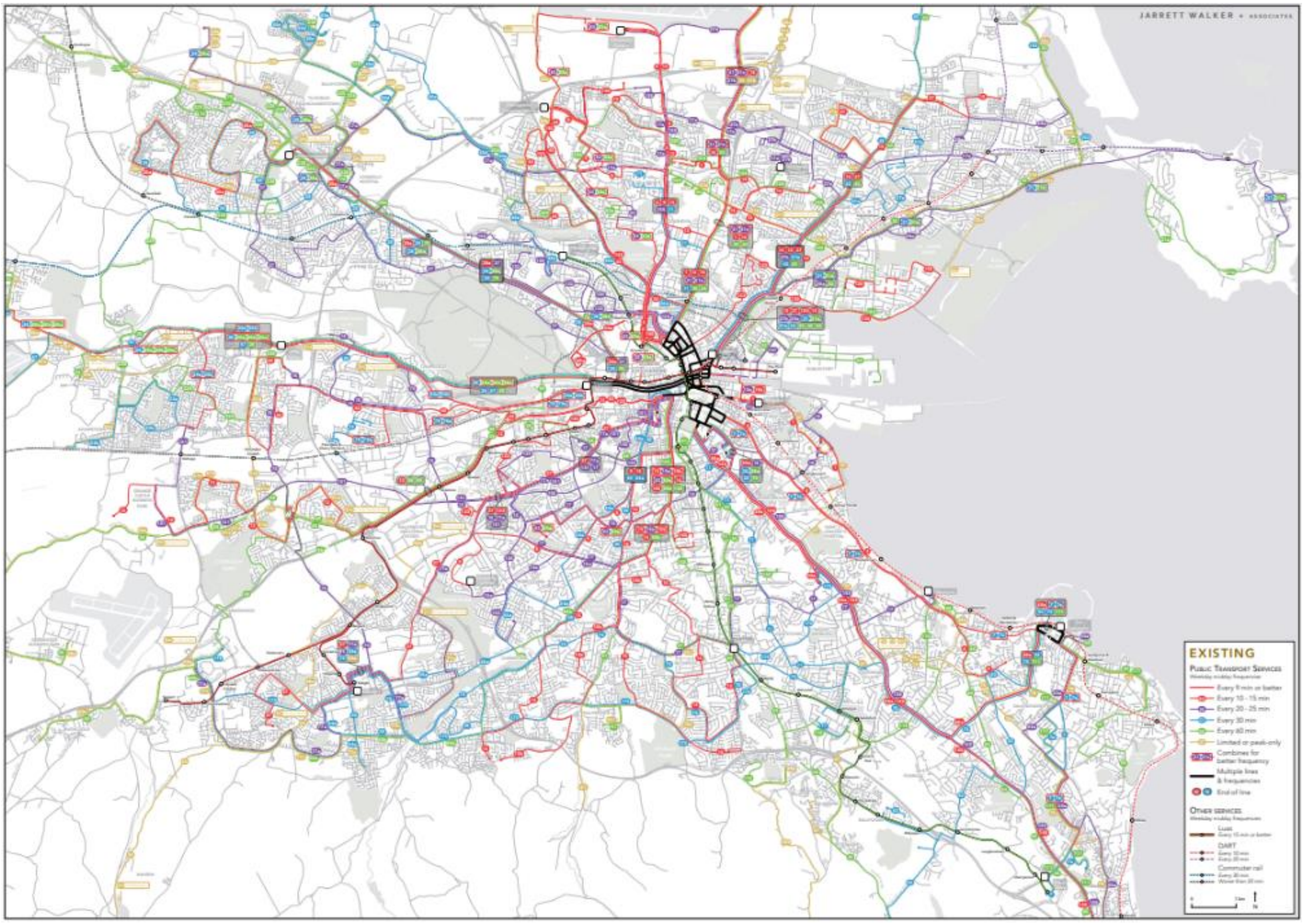

Figure 4.5: Existing Bus Network (source: wwwe.busconnects.ie)

4.2.2.2 Bus Stations and Depots

The main bus station within Dublin is Busaras Bus Station which is located to the North of Liffey and to the East of O'Connell Street, adjacent to Connolly Rail Station. This bus station is the principal bus station in Dublin for Regional and Expressway bus services operated by Bus Eireann. There is a good level of integration between long distance express services, outer suburban services and city services within Dublin City Centre and in the environs of Busaras Bus Station.

4.2.2.3 Light Rail

Dublin's Light Rail Network consists of three lines. The Red line runs from Tallaght to the Point (Three Arena), with a spur from Tallaght to City West, and to Connolly Station in the City Centre. The Green Line runs from Bride's Glen in South Dublin to St. Stephens Green and the Luas Cross City runs from St. Stephens Green to Broombridge. These lines provide a high frequency service along these corridors with trams operating at a frequency of up to every 3 minutes at peak hours. The Luas connects with Connolly Station and Heuston Station via the Greenline and is also in proximity to Tara and Dart station.

4.2.2.4 Heavy Rail

Dublin is serviced by 4 main rail lines (North Coastal, South Coastal, Kildare Line and Maynooth Line), and has Connolly and Heuston as the main rail stations. Additional city centre stops such as Pearse Street and Tara Street also provide interchange to regional rail services. Drumcondra Railway station also provides an interchange with heavy rail services on the Maynooth line, Dublin Connolly-Sligo line, and Grand Canal Dock and Dublin Heuston to Portlaoise line.

Commuter services are provided by the DART which runs along the east coast from Malahide or Howth in the North of the city to Bray or Greystones in the South of the city (extending into County Wicklow). Pearse and Tara Street stations provide interchange for DART services.

There are also a number of ‘commuter services’ including the:

- Dublin Northern Commuter (operates from Connolly)
- Dublin Portlaoise Commuter (operates from Heuston)
- Dublin Longford Commuter (operates from Connolly)
- Dublin Dunboyne / M3 Parkway (operates from Connolly)
- Dublin Southern Commuter (operates from Connolly)
- Mallow – Cork – Cobh – Midleton Commuter

The proposed Project alignment allows interchange to the Maynooth Line at Glasnevin Project Station, as well as interchange with the Northern and South Eastern Line at Tara Street Station.

Passenger Rail connectivity with the proposed Project alignment is also available in the City Centre where the route alignment is in proximity to Tara Station. Connections to Heuston Station are also possible via the Luas Red Line. Intercity connections are provided at Connolly onward to Belfast, Sligo and Rosslare Europort and from Heuston to Cork and Galway.

4.2.2.5 Heuston Station / Connolly Station

Heuston and Connolly are Dublin’s main railway stations. Heuston station is located at the Western end of the Dublin Quays. It provides direct train services to Galway, Cork, Limerick, Waterford, Westport, Portlaoise and Kildare. It is currently serviced by the Luas Red line and has no direct rail links to Dublin Airport.

Connolly Station is located off O’Connell Street on the North side of the Liffey. It provides direct routes to Sligo, Belfast and Rosslare Europort as well as commuter links to Drogheda, Dundalk, Maynooth and Longford. It has no direct rail links to Dublin Airport.

4.2.2.6 Existing Public Transport Capacities

From the ERM modelling data, the Total Capacities of the existing public transport networks and Volume to Capacity Ratios have been extracted for Scenario A 2035, and Scenario B 2035. In the table, values less than 0.80 represent that the network is operating 'under capacity', values between 0.80 and 0.95 represent that the network is 'near capacity' and values greater than 1 represent that the network is operating 'Over Capacity'.

Table 4.2 shows that in both Scenario A and Scenario B, all rail services are under capacity, however Scenario B does note lower ratios. In Scenario A, the DART Northern Line and Luas Red Line have a ratio of 0.75, approaching the threshold for being considered 'near capacity'.

All key bus corridors identified in Scenario A are over capacity, with the exception of the N1 Drumcondra which is under capacity, and Dublin Airport (at the R132) which is 'near capacity'. In Scenario B, all identified bus corridors are either 'near capacity' or 'over capacity', with the exception of the N1 Drumcondra corridor. The Northwood/Ballymun Corridor, and the Ballymun Road/Finglas far exceed the capacity in both Scenario A and Scenario B.

Table 4.2: Volume to Capacity Ratio of Existing Networks in Opening Year

Maximum Volume to Capacity Ratio on line	Scenario A Do Min	Scenario B Do Min
PT Line	**2035**	**2035**
DART Northern Line	0.75	0.65
DART South Eastern Line	0.44	0.27
Luas Green Line	0.66	0.59
Luas Red Line	0.75	0.64
DART Maynooth Line	0.48	0.58
DART Kildare Line	0.48	0.26
Bus Corridors		
Lissenhall (R132)	1.08	0.93
Swords (R132)	1.13	1.05
Dublin Airport (M1)	0.94	0.87
Dublin Airport (R132)	0.82	1
Northwood/Ballymun (Santry Avenue)	1.33	1.47
R108 Ballymun Road /R135 Finglas Road	1.14	1.24
N1 Drumcondra	0.7	0.79
South City (between Ranelagh and Rathmines	1.08	0.93

4.2.2.7 Future Receiving Environment

The assessment of impacts has also taken cognisance of the Bus Network Redesign proposals, which provide for Spine, Orbital, Other City Bound, Local and Peak only routes, with an extract of the Bus Network Redesign in Dublin City Centre shown in Figure 4.6. The Bus Network Redesign will have an impact on the frequency of services in the vicinity of the alignment

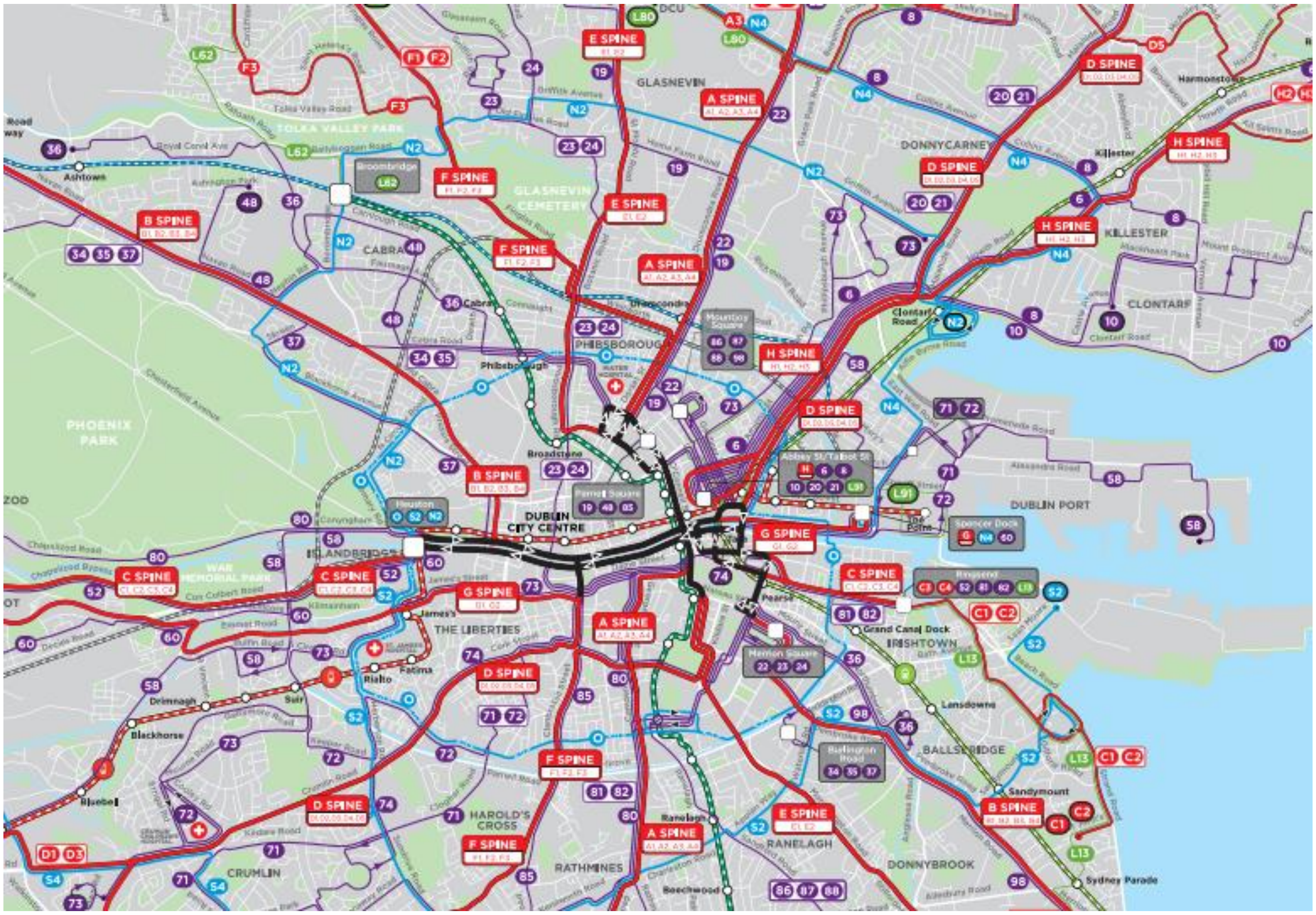

Figure 4.6: Extract from Bus Network Redesign (source: www.busconnets.ie)

4.2.3 Existing Road Network

The overall road network consists of a network of strategic roads such as motorways (M50, M1) and national primary roads (N2, N4) which provide high-capacity connections between the key regional centres and larger towns. The strategic network is served by regional (R132 Swords Bypass, R108 Ballymun Road) and local roads (L2305 Nevinstown Lane, L2300 Boroimhe Road), providing access to smaller towns and centres. Figure 4.7 presents the various classifications within the GDA's road network.

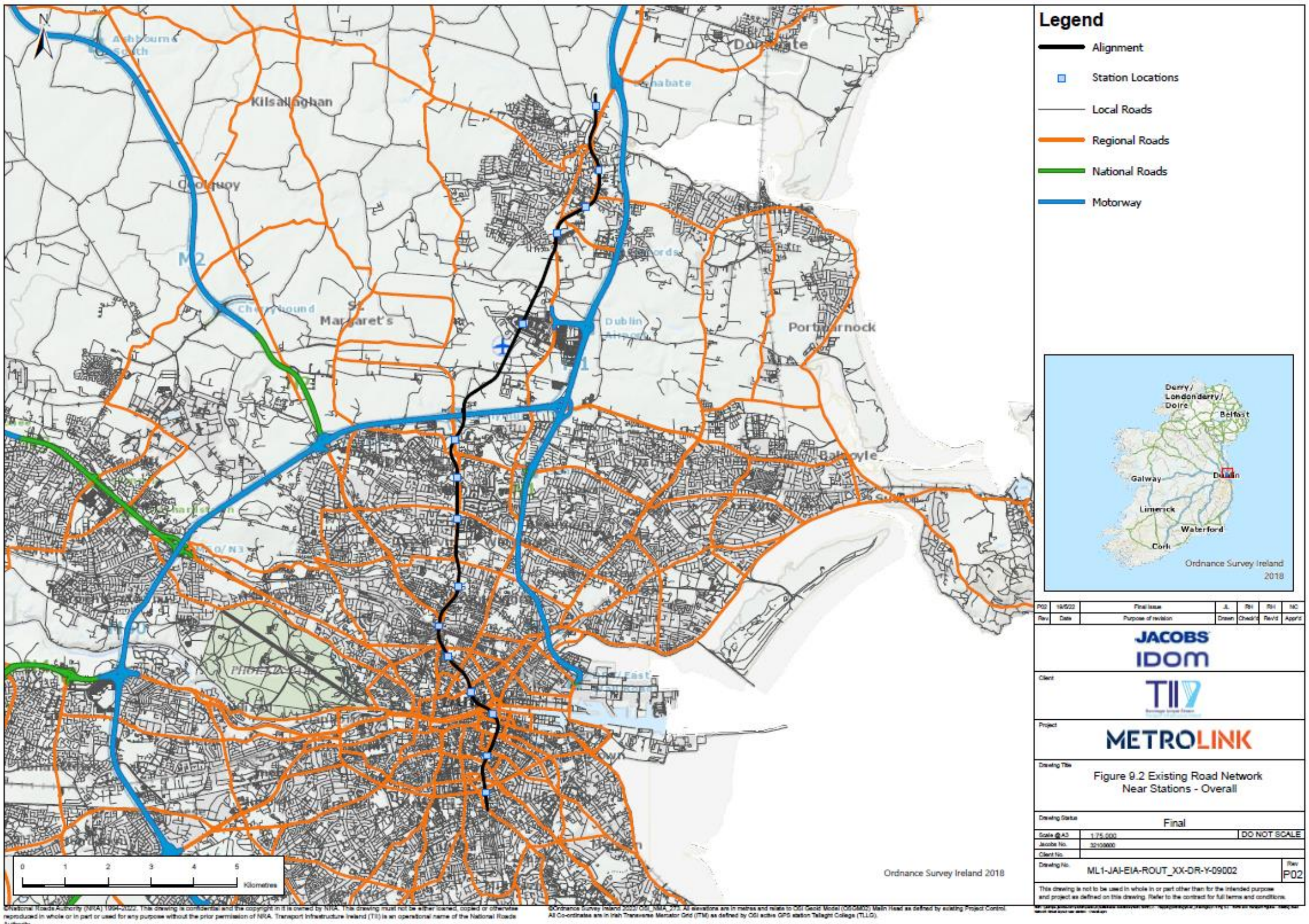

Figure 4.7: Existing Road Network within Greater Dublin Area

4.2.3.1 Future Receiving Environment

The Swords Western Relief Road (SWRR) is an objective of the Fingal Development Plan 2017-2023 (FCC 2017a), which is proposed to connect the R132 Swords Bypass north of the M1 Lissenhall junction and proceeds for approximately 9km through rural Fingal to the N2 north of the M50. The SWRR 'could remove significant volumes of traffic from the Swords Town Centre area, as well as serving strategic traffic between the M1 and M2/M50 corridors.' It could also 'serve the proposed strategic park and ride, minimising the amount of traffic utilising limited carrying capacity on the existing and proposed local road network in Swords.'

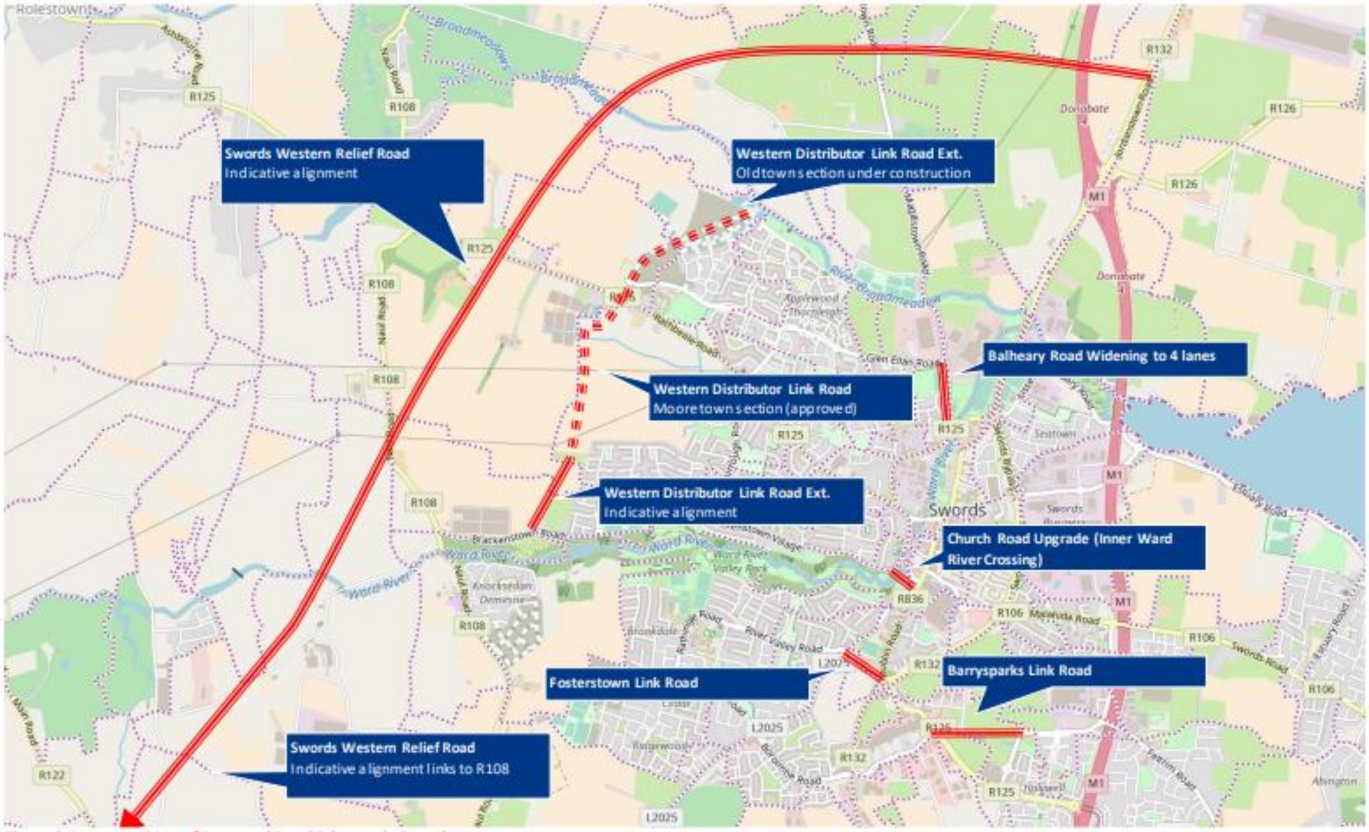

Figure 4.8: Indicative Alignment of Swords Western Relief Road (FCC 2019b)

FCC, in conjunction with the NTA, seek to improve connectivity for pedestrians and cyclists along the R132 Swords Bypass by implementing signalised junctions at the current Malahide Road Roundabout, Seatown Road Roundabout and Estuary Roundabout. This scheme is referred to as the R132 Connectivity Project.

The main vehicular access to the Fosterstown Masterplan lands will be via the new Fosterstown Link Road from the R132 Swords Bypass to the Forest Road, as shown in Figure 4.9. The Pinnock Hill Roundabout on the R132 Swords Bypass will be upgraded to accommodate the new link road.

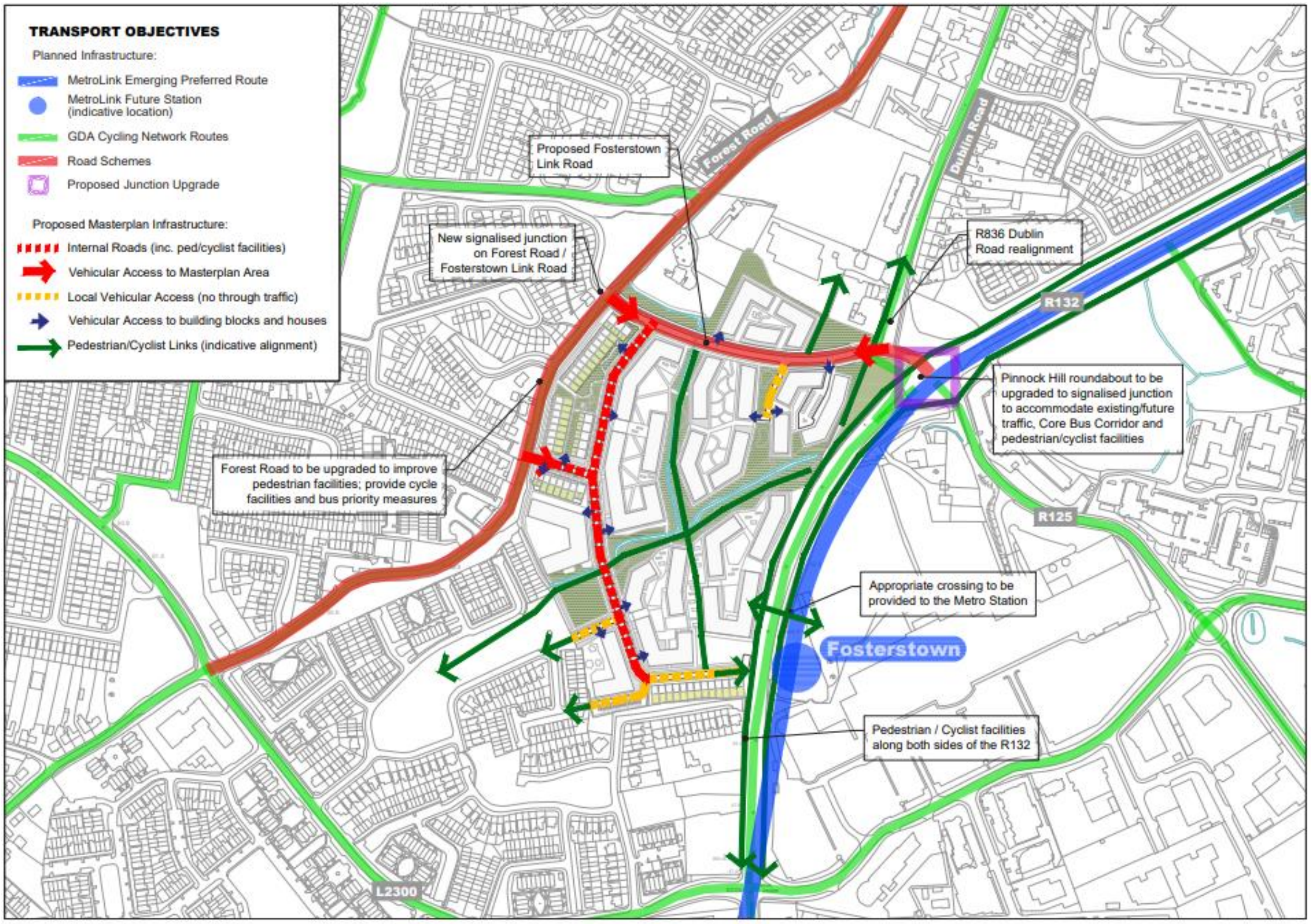

Figure 4.9: Transport Objectives of Fosterstown Masterplan Lands (FCC 2019a)

At Dublin Airport, DAA has received planning approval for the creation of a paid drop-off area for both Terminal 1 and Terminal 2. The proposed exit from the paid drop-off facility involves changes to the existing road layout and the relocation of a pedestrian crossing.

South of the M50 as part of the BusConnects Core Bus Corridor proposals, there will be a reconfiguration of lanes on the R108 Ballymun Road and Leeson Street Lower/St Stephen’s Green to accommodate additional bus lanes. Further details of the proposals specific to each station can be found in the relevant station TTA.

4.2.4 Existing Cycling Network

The cycle network shown in Figure 4.10 represents the base cycling network in Dublin and it is based on the GDA Cycle Network Survey 2013. At the time of writing, a more up-to-date cycle network was not available, however some additional cycle routes have been built since the GDA Cycle Network survey in 2013. The Draft GDA Cycle Network Plan (2021) has also been prepared as part of the Draft Transport Strategy for the GDA 2022-2042, however this has not been adopted at present. The categorisations broadly align, with the exception of the distinction between ‘Primary Radial’ and ‘Primary Orbital’ routes in the strategic network.

The existing network comprises mainly radial cycle routes and limited orbital routes. Most of the cycle routes are concentrated around Dublin City Centre and within the M50 Cordon. The GDA also comprises a number of Greenways mainly near public park lands and in Dublin City along the Grand Canal.

Further details on existing cycling provisions around the stations can be found within the station specific TTA reports.

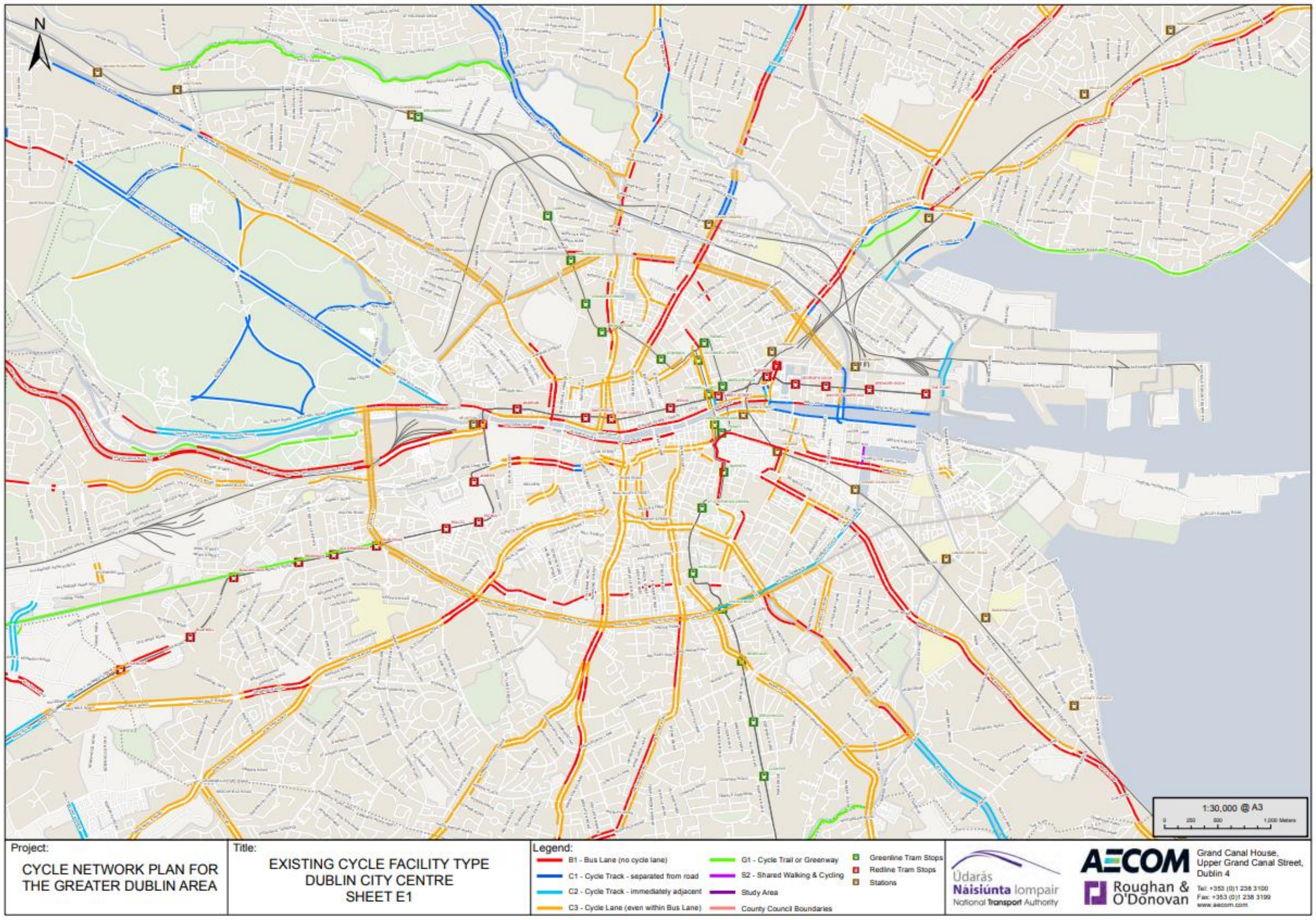

Figure 4.10: GDA Base Cycle Network (www.nationaltransport.ie, Existing Facilities Map)

4.2.4.1 Future Receiving Environment

As identified in the Oldtown/Mooretown Local Area Plan, accessibility in the Ward River area will be improved in the future with the development of the Swords Western Distributor Road (SWDR), which will form a spine of access to both Oldtown and Mooretown. The SWDR will 'comprise a safe and attractive pedestrian/cyclist green corridor to facilitate access to the Ward River Valley Park, thereby ensuring connectivity to the wider green network of open spaces' (FCC 2019b, p17).

The lands to the south-west of the station, between Glen Ellan Road and Balheary Road, are zoned for development under the Estuary West Masterplan. It is envisaged that 'Estuary West will become a vibrant residential and mixed-use community, with active and friendly streetscapes', including a proposal for a pedestrian/cyclist connection between the lands and Estuary Station. This will improve permeability along and across the Broadmeadow River.

As part of the Barrysparks and Crowscastle Masterplan, there are a number of green infrastructure objectives for the Masterplan lands, including providing a central north-south green corridor encompassing pedestrian and cyclist infrastructure and both active and passive open space amenities connecting from the R125 to the south of the site to the R132 Swords Bypass to the north. A pedestrian and cyclist connection will also be provided from the proposed central spine to the existing open space area at Holywell Avenue to facilitate movements to the Pavillions, Swords Main Street and into a redesigned Ward River Valley Park as set out in Swords Masterplan 2009.

The Fosterstown Masterplan Lands also seek to facilitate strong pedestrian and cyclist connections, as well as strong connections to the town centre and public transport infrastructure. The masterplan also incorporates pedestrian and cyclist connections to facilitate access to the proposed Fosterstown Station and Swords Main Street.

As part of the R132 Connectivity Project, the realignment of the existing Estuary Roundabout, Seatown Road Roundabout and Malahide Road Roundabout to signalised junctions will provide for designated cycle lanes along the R132, and cycle crossings to improve connectivity across the R132 Swords Bypass. A crossing facility will be provided north of Estuary Roundabout, and north of Pinnock Hill Roundabout.

The BusConnects programme will also amend the Pinnock Hill Roundabout and Nevinstown Junction, providing cycling facilities at these junctions and along the R132 Swords Bypass in this section.

At Dublin Airport, the future receiving environment of the cycle network will remain unchanged from the baseline scenario.

The BusConnects Core Bus Corridor proposals commence on the Ballymun Road at its junction with St Margaret's Road, south of the M50 Junction 4. Between St Margaret's Road and Shangan Road, a bus lane, two general traffic lanes and a segregated cycle track will be provided in each direction. Designated cycle lanes and crossings will also be provided at the R108/Northwood Avenue junction. Improvements will be made to links such as the R108 Ballymun Road/St Mobhi Road to accommodate the provision of designated cycle lanes and crossing facilities. A new cycle bridge will also be provided over Royal Canal as part of the proposals.

4.2.5 Existing Pedestrian Network

The Transport Strategy for the Greater Dublin Area 2016 – 2035 describes the pedestrian Network in Dublin as poor and affecting all regions in the GDA, but as being particularly critical in Dublin City Centre:

"At present, while footpaths are provided in the vast majority of built-up areas to provide for pedestrian movement, the quality of this provision is often poor. Footpath widths are often substandard, and surfaces can be uneven. There are often many obstructions on footpaths such as advertising, redundant poles and other clutter, which causes particular problems for those with mobility impairments or those walking with buggies and prams. At many junctions across the GDA, pedestrian crossings are not provided, or are provided only on some arms. The amount of time given to pedestrians to cross, and the time they must wait to cross, also renders the walking experience sub-optimal. While these issues affect all parts of the GDA, they are particularly critical in Dublin City Centre where the number of pedestrians is highest."

The strategic pedestrian network helps identify important pedestrian routes in the context of related spaces and key destinations. Dublin City Council's Public Realm Strategy 'Your City- Your Space' (Dublin City Council, 2012) identifies important pedestrian routes and spaces within the city.

Dublin City Council also identify Strategic Pedestrian Routes within Dublin City Centre (DCC Development Plan 2016-2022), such as the Civic Spine and Liffey Corridor, Primary and Secondary Streets and Historic Approaches, as presented in Figure 4.11. Further details on the existing pedestrian provisions around stations can be found within the station specific TTA reports.

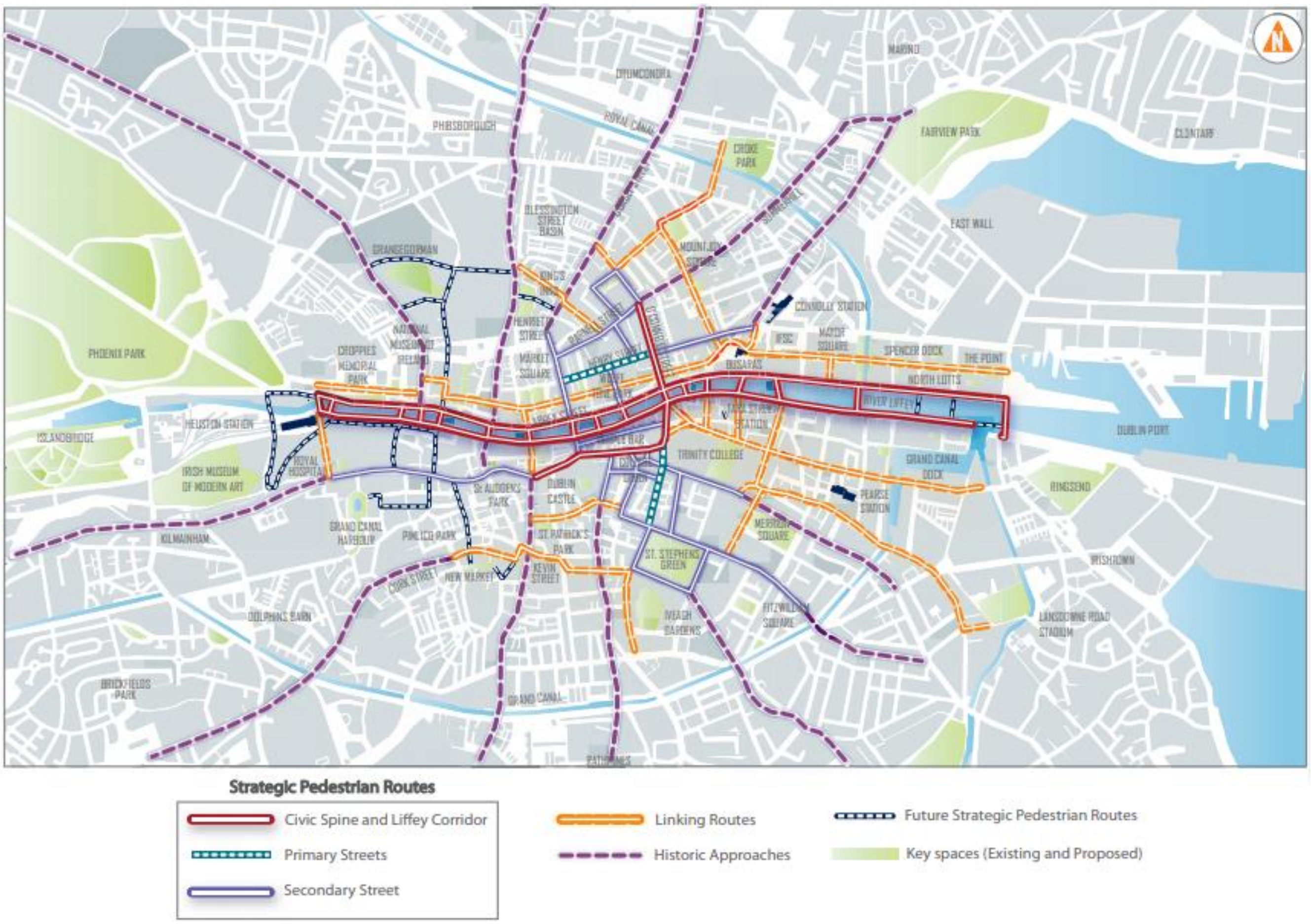

Figure 4.11: DCC Pedestrian Hierarchy

4.2.5.1 Future Receiving Environment

The future receiving pedestrian network around the R132 has been detailed in section 4.2.4.1. At Dublin Airport, DAA has received planning approval for the creation of a paid drop-off area for both Terminal 1 and Terminal 2. The proposed exit from the paid drop-off facility involves changes to the existing road layout and the relocation of a pedestrian crossing.

As part of the BusConnects Core Bus Corridor proposals, the existing pedestrian footways and crossings at the St Margaret's Road/R108 Junction will be maintained. Additional pedestrian and cycle crossings will be provided at the R108/Northwood Avenue Junction as part of the proposals, as well as at R108 St Mobhi Road, R108 Phibsborough Road and Royal Canal Bank. A new linkage in Dublin Cit Centre will also be present at O'Connell Street/Moore Street.

5. Trip Generation / Trip Attraction

5.1 Introduction

It is anticipated that the Project will generate additional trips during the operational phase. and this chapter will outline the proposed methodology for estimating the additional trips.

5.2 Assessment Years and Traffic Growth

Passenger demand modelling has been used to predict the numbers of passengers boarding and alighting at each station, and the resulting passenger load on the MetroLink trains, for the years 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). The scenarios considered for assessment for each of the years 2035, 2050 and 2065 are outlines in Table 5.1.

Table 5.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project
Do Minimum Scenario	Committed transport schemes in the absence of the Project
Do Something - Scenario A	Scenario with the Project and committed transport schemes only.
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for delivery by 2035 for Opening year (2035) and planned schemes under the Transport Strategy for the GDA for the Design Year (2050) and the Forecast Year (2065)

Committed transport schemes in the Do Minimum scenario and in Scenario A, that have been progressed through planning and are either under construction or are programmed into the capital expenditure budget, include, but are not limited to:

- Luas Green Line Capacity Enhancement- Phase 1;
- BusConnects Dublin Area Network Redesign Services; and,
- Bus Connects Fares and Ticketing.

Scenario B represents the likely future receiving environment and is based on the delivery of the schemes identified within the National Development Plan for 2035, and on the implementation of the NTA's Greater Dublin Area (GDA) Transport Strategy for 2050 and 2065. As such, this scenario considers the cumulative impacts of interactions between other projects that are most likely to impact on transport movements in the area. Schemes included in this scenario are, but are not limited to:

- Luas Green Line Capacity Enhancement- Phase 2;

- Luas Finglas;
- Luas Lucan;
- BusConnects Core Bus Corridors (planned 16 corridors); and
- DART+.

More information on each modelled scenario is available in the Transport Modelling Plan (Appendix A9.3).

5.2.1 Forecast Growth Scenarios

In order to ensure that the proposed Project can operate efficiently and deliver benefits into the future, forecasts are required to determine the likely future levels of demand on Dublin's transport system. The TII PAG states that *"Unbiased future demand projections are a critical input in ensuring that capacity for transport infrastructure is neither too large nor too small to meet the future demand. Furthermore, travel demand projections inform the economic and environmental appraisal of transport schemes and therefore play a fundamental role in deciding whether a scheme is to progress".*

The NTA have developed a planning datasheet forecast that aligns with the National Planning Framework (NPF) growth levels for the year 2040. They also have planning datasheets for 2035, 2050 and 2065.

The NTA planning datasheets have been utilised to determine demands for future growth scenarios.

In addition to the forecast growth associated with the typical land use patterns, Dublin Airport is a key growth driver in the corridor and has a different growth associated with flight travel demand. Within the ERM growth in landside demand is determined for passengers, staff and freight, applied to the Dublin Airport Special Zone. Freight and staff numbers are forecasted on a scaling factor, which will be aligned with passenger growth forecasts. Department of Transport, Tourism and Sport's (DTTAS) report "Review of Capacity Needs at Ireland's State Airports - August 2018" outlines forecast passenger growth to 2050 for Low, Central and High growth scenarios.

Figure 5.1 presents the growth in population and jobs within a 15minute walking catchment of the alignment, from the 2019 baseline scenario, to the 2035, 2050 and 2065 Operational Phase Years using the NTA's Planning Datasheet forecasts. The population along the alignment grows from approximately 196,000 in 2035, to 225,000 in 2050, and to 253,000 in 2065. The job growth along the alignment grows from approximately 269,000 in 2035, to 331,000 in 2050, and to 370,000 in 2065.

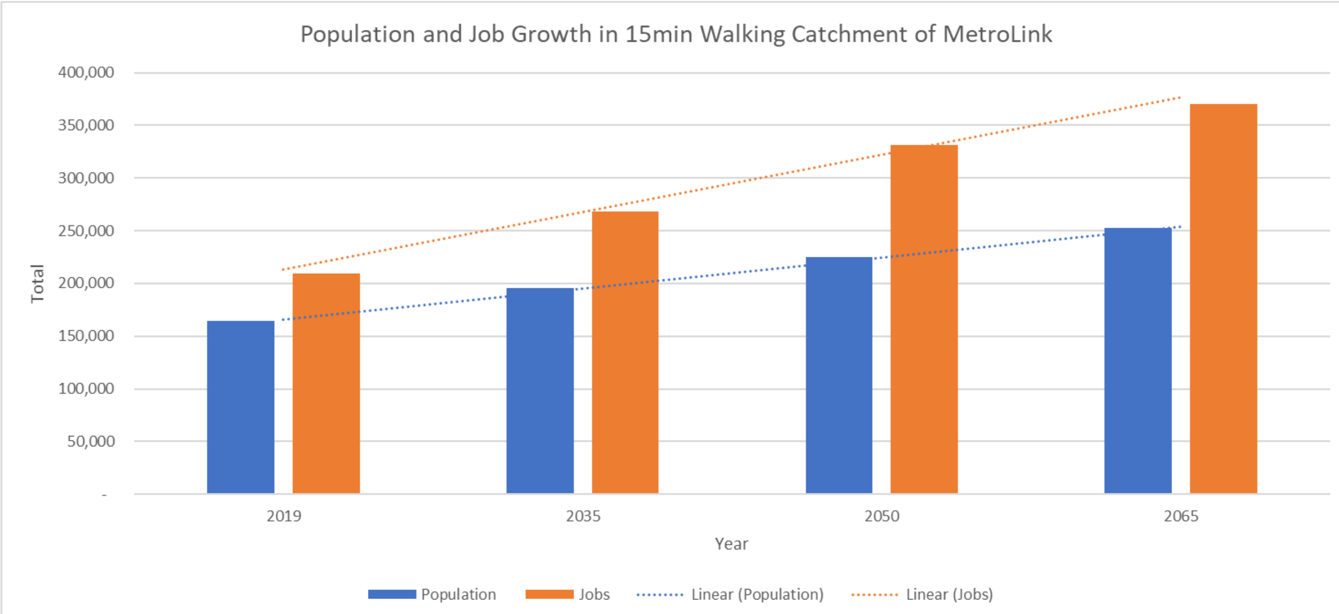

Figure 5.1: Population and Job Growth within 15min Walking Catchment of the Alignment

5.2.2 Operational Phase

Given the nature of the proposed Project as a significant public transport scheme, it will result in reductions in private car trips from the catchment areas and increases in the overall public transport trips.

While there will be anticipated vehicular demand associated with the proposed Park and Ride, this is not anticipated to be significant 'new' trips on the network, instead the demand associated with the Park and Ride will be existing trips from the north of the city that currently travel into Dublin and park, which will instead re-route to the Park and Ride and travel into the city via the proposed Project.

5.3 Operational Phase

5.3.1 Methodology

Traffic estimates associated with the Project's operational phase have been established by utilising the NTA ERM. The ERM provides a comprehensive representation of multi-modal travel patterns across the Greater Dublin Area and represents the most suitable tool for the testing and appraisal of the proposed Project.

The ERM has also been utilised to establish Trip Distribution, Trip Assignment and Modal Split associated with the proposed Project operational phase.

The Traffic Modelling Plan (Appendix A9.3) and Transport Modelling Report (Appendix A9.4) should be read in conjunction with this report, which outlines the approach to both strategic and local modelling, both of which form key elements of the TTA. Notwithstanding this, a summary of the proposed modelling approach is provided below.

In terms of the overarching approach relating to the TTA, the strategic multi-modal modelling underpins the assessment. The outputs from which are fed into local / micro models. The local / micro modelling is used to assess in greater detail the potential station specific impacts and to develop appropriate mitigation at these locations. Figure 5.2 below summarises the modelling approach relating to the TTA.

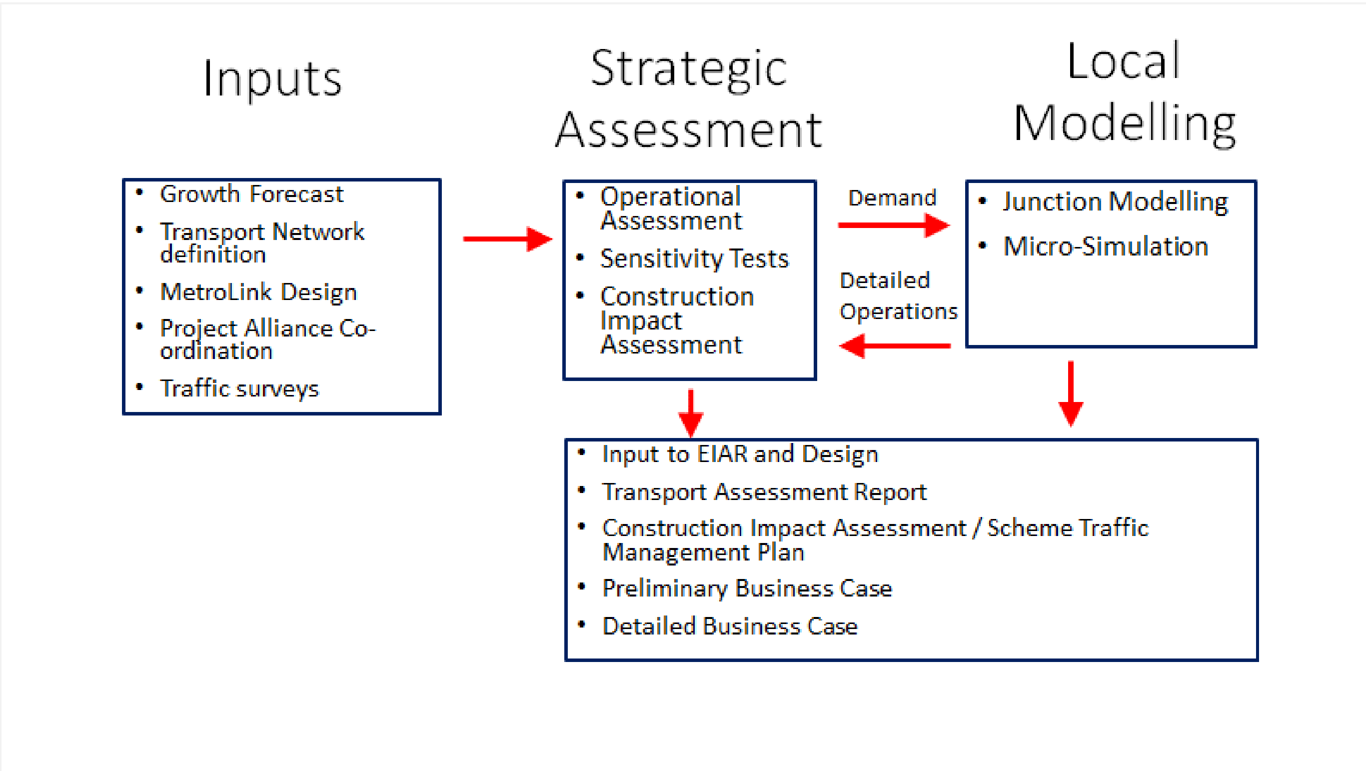

Figure 5.2: Transport Assessment Approach

5.3.2 Project Usage

5.3.2.1 Line Flows

Figure 5.3 and Figure 5.4 present the volume of load passengers throughout the alignments in both scenarios, in the AM peak hour southbound and PM peak hour northbound, respectively. In the AM peak hour, Scenario B sees a lower volume of load passengers for much of the alignment, however between Fosterstown and Northwood it sees approximately 1,000 more passengers than Scenario A. In the PM peak hour, Scenario B remains lower than Scenario A throughout the full alignment.

In the AM peak hour southbound the largest volume of load passengers is in Scenario A 2065 at Glasnevin Station with approximately 15,500 passengers. In Scenario B 2065, Ballymun sees the largest volume of load passengers, reaching approximately 14,000 passengers.

In the PM peak period northbound, Mater Station sees the largest volume of onward load passengers in Scenario A 2065, with approximately 13,500 passengers, whereas Glasnevin sees the largest volume of load passengers in Scenario B reaching almost 10,000. Scenario A and Scenario B largely follow similar trends, with the largest delta in line flow between the two scenarios at O’Connell Street, with Scenario A seeing approximately 3,000 more passengers than Scenario B.

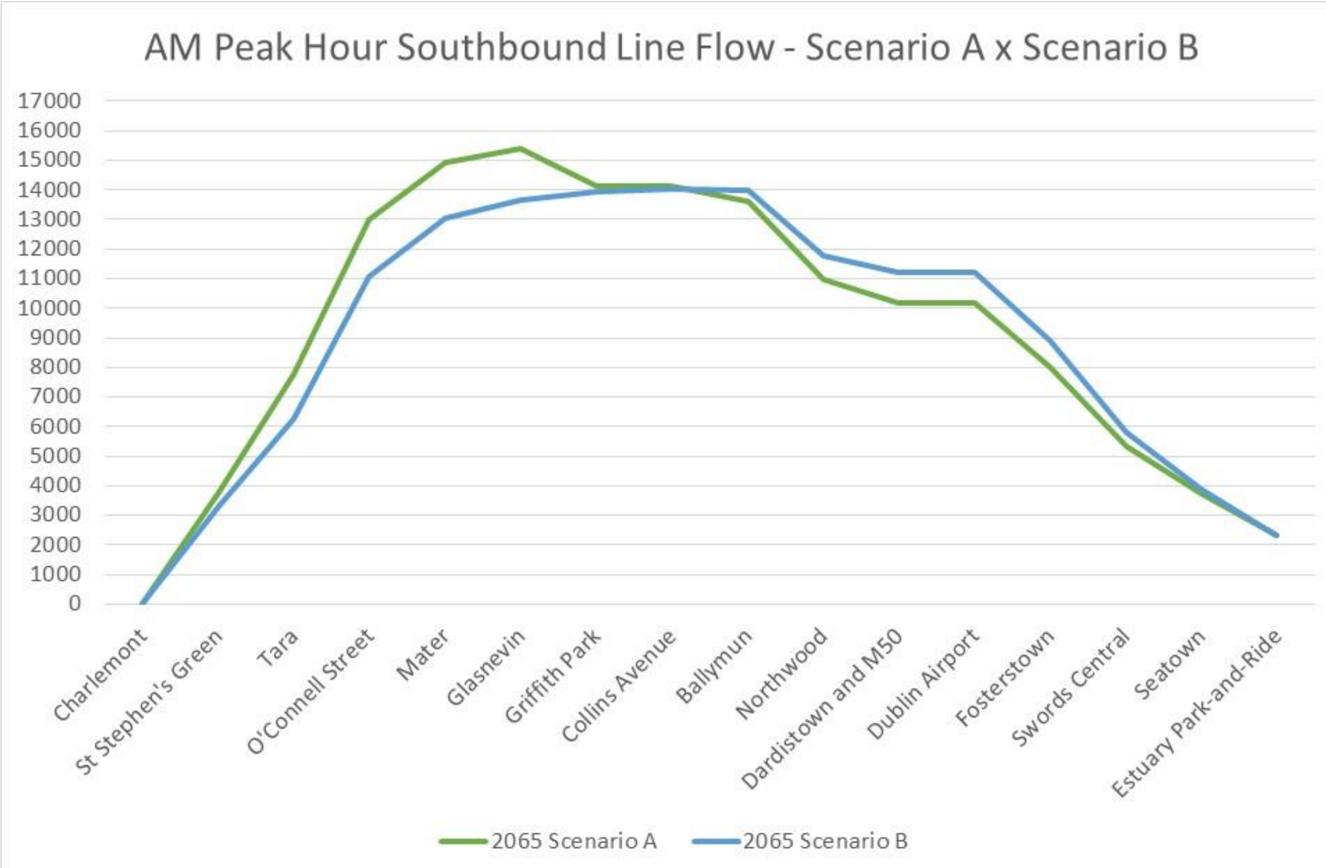

Figure 5.3: AM Peak Hour Southbound – Scenario A x Scenario B

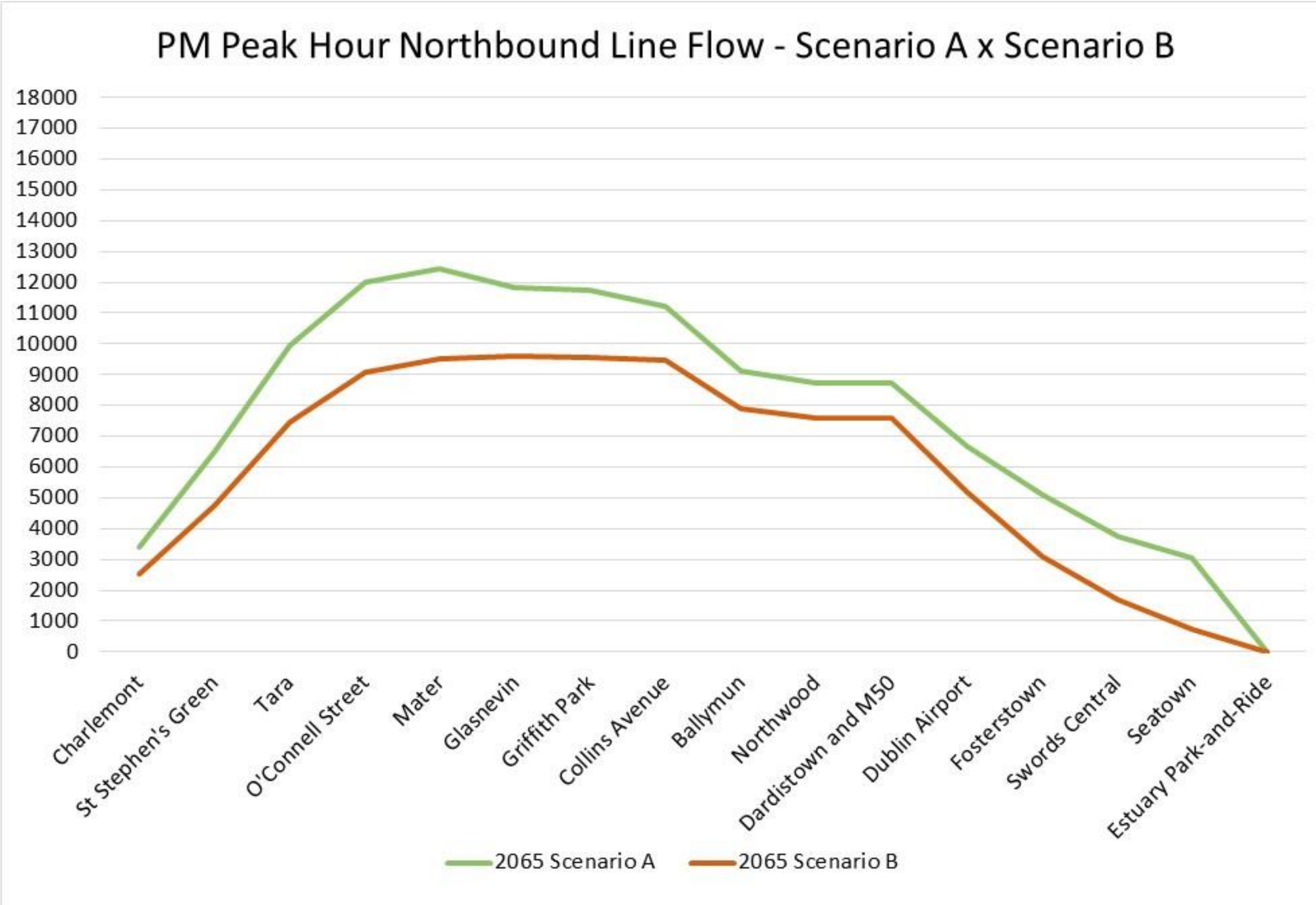

Figure 5.4: PM Peak Hour Northbound – Scenario A x Scenario B

5.3.2.2 Boarding and Alighting

The station specific TTAs present the boarding and alighting passengers per station for Opening, Design and Forecast Years in both Scenario A and Scenario B, in each of the peak hours.

Figure 5.5 below presents the volume of boarding and alighting passengers over a 12hr period in both directions, in Scenario A. In all forecast years, Dublin Airport has the highest volume of boarding and alighting passengers over the 12hr period, reaching over 50,700 total passengers in 2035, over 74,200 total passengers in 2050, rising to 97,800 passengers in 2065.

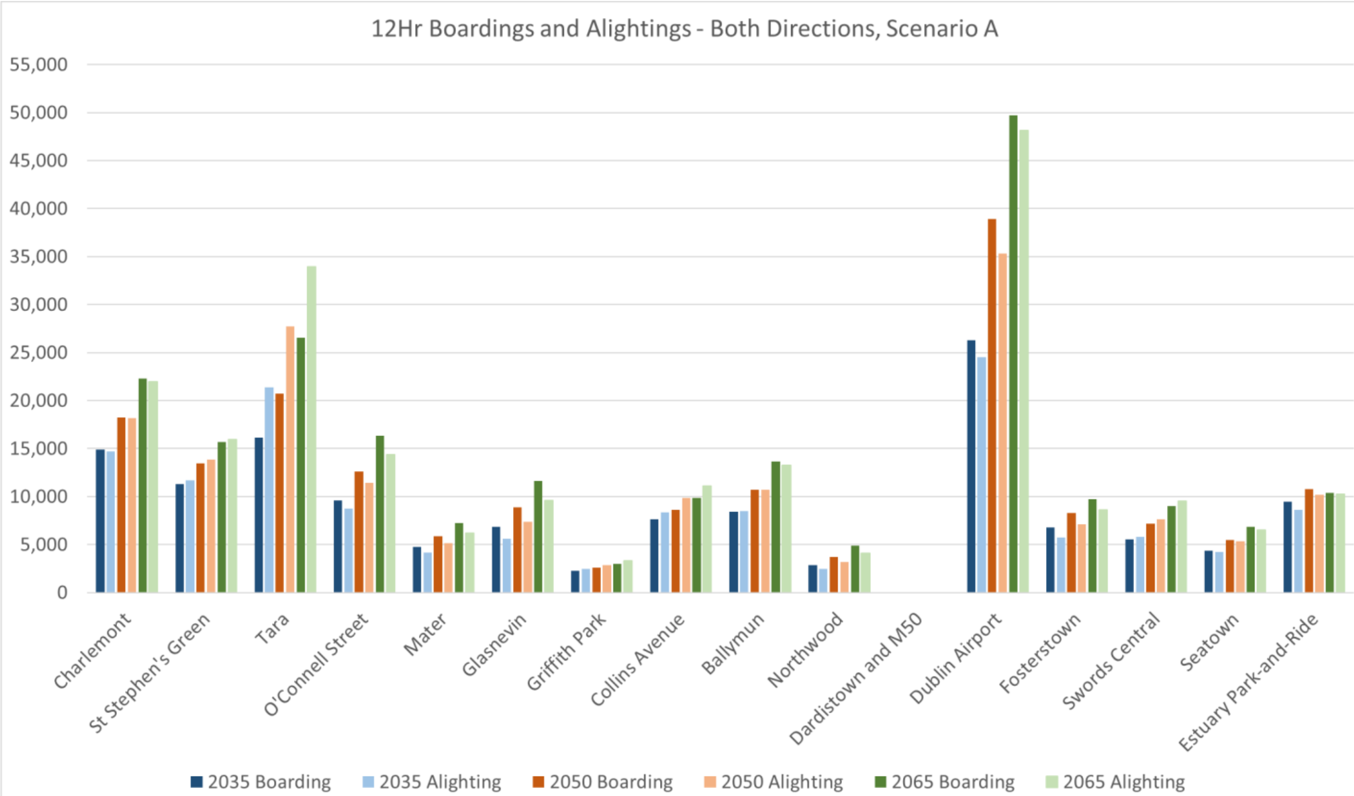

Figure 5.5: 12hr Boardings and Alightings Both Directions- Scenario A

Figure 5.6 presents the volume of boarding and alighting passengers during a 12hr period in both directions, in Scenario B. As with Scenario A, Dublin Airport station sees the largest volume of total passengers, with over 51,600 total passengers in 2035, rising to 82,700 total passengers in 2050, reaching 98,600 total passengers in 2065.

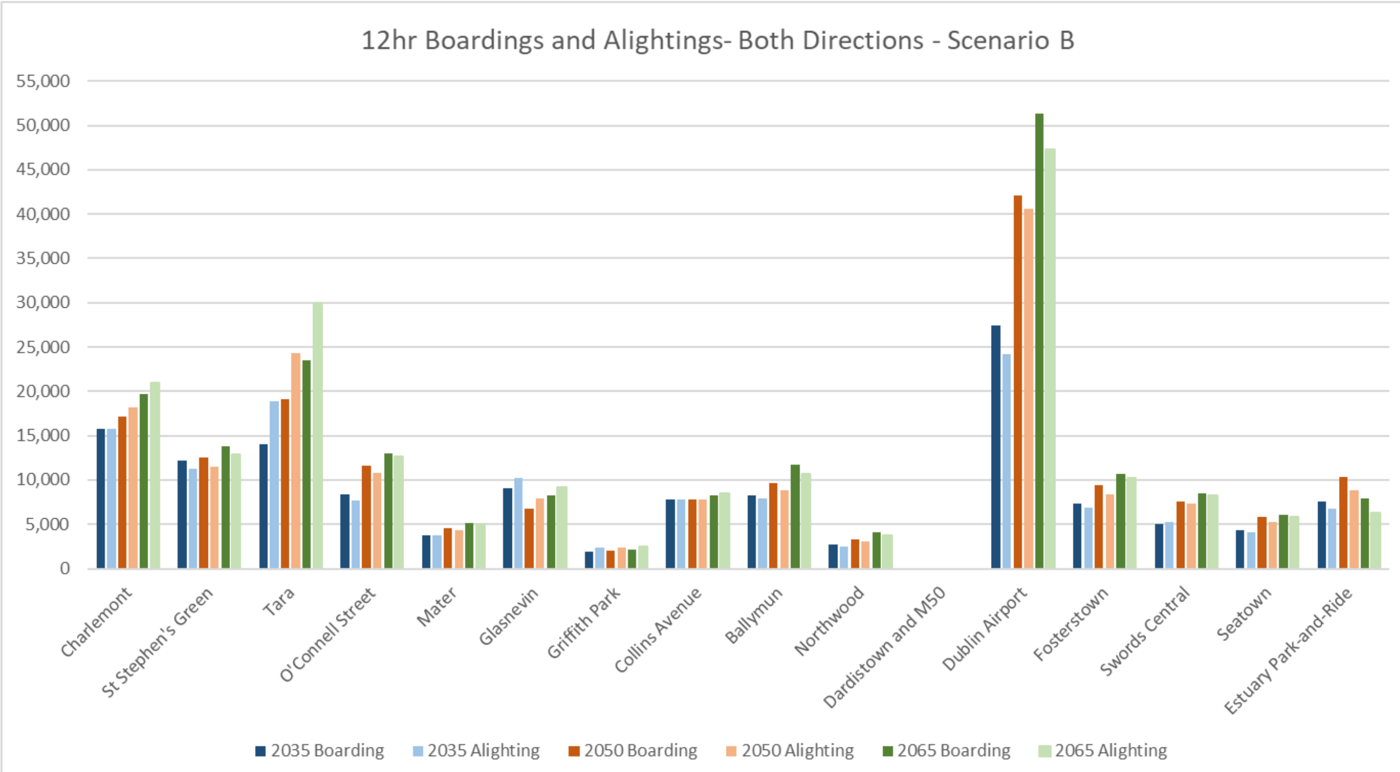

Figure 5.6: 12hr Boardings and Alighting Both Directions- Scenario B

5.3.3 Population Accessible by Mode

Population data has been extracted from the Forecast Year Planning Data Sheets, received from the NTA, for the Operational Phase years of 2035, 2050 and 2065.

Table 5.2 presents the volume of people within the 30-minute modal catchments of the station in 2035, 2050 and 2065, as indicated by the Planning Datasheets. In the table, 'PT to Metro' and 'PT from Metro' are presented separately as it is often the case that the inbound services may take an alternative route to the outbound services. In the total 30minute catchment, PT From Metro has the highest population catchment across all modes and across all years, encapsulating almost 1.6million people in 2035, over 1.8million in 2050, and over 2million people in 2065.

Table 5.2: Population within 30min Journey Time from Alignment

Mode	2035	2050	2065
Walking	693,930	807,197	922,919
Cycling	1,373,411	1,572,716	1,779,202
PT to Metro	1,531,896	1,751,730	1,979,376
PT from Metro	1,595,745	1,817,229	2,047,317

5.3.4 Changes in Modal Trips

Mode share comparisons between the Do Minimum and Do Something scenarios have been undertaken to understand the percentage change in modal split between the two scenarios. Similarly, comparisons have also been undertaken to understand the percentage change in modal split from 2035, to 2050 and 2065. Do Minimum and Do Something mode split over 12 hours, within the Project's Area of Influence, is shown in Table 5.3. The model presents end-to-end means of travel, however the nuances of the Park and Ride module considers Park and Ride users as both a Road trip and a PT trip, regardless of the length of car trip (i.e. the PT element is the primary mode in the full journey). Similarly, as the model presents end-to-end means of travel only, those walking and cycling to a PT node (such as the Project, or bus) are counted as a PT trip only within the mode share calculations.

In Scenario A 2035, the mode share of PT (including the proposed Project) within the Project's area of influence, as defined in section 4.1 Study Area, increases by 0.78 percentage points, from 16.33% to 17.10% in the Do Something scenario, whilst Road mode share decreases by 0.3 percentage points from 57.28% to 57%. In the 2050 scenario, PT (including the proposed Project) increases its mode share by 0.92 percentage points between the Do Minimum and Do Something scenarios from 17.09% to 18.01%, whilst Road mode share decreases by 0.55 percentage points from 55.73% to 55.18%, indicating a modal shift from private vehicles to public transport when proposed Project is in place. In 2065, the PT (including the proposed Project) increases its mode share by 1.15 percentage points from 17.80% in the Do Minimum scenario, to 18.94% in the Do Something scenario, whereas the Road mode share falls by 0.82 percentage points from 54.13% to 53.31%.

Table 5.3: Scenario A DM-DS Summary of Modal Split within Area of Influence – 12hrs

	2035		2050		2065	
Do Minimum						
	12 hour (No. of Trips)	**% Mode Split**	**12 hour (No. of Trips)**	**% Mode Split**	**12 hour (No. of Trips)**	**% Mode Split**
PT	794,921	16.33%	934,217	17.09%	1,080,951	17.80%
Road	2,789,179	57.28%	3,047,259	55.73%	3,287,397	54.13%
Cycle	127,414	2.62%	154,709	2.83%	185,830	3.06%
Walk	1,157,557	23,77%	1,331,561	24.35%	1,519,462	25.02%
Total	4,869,071		5,467,747		6,073,640	
Do Something						
PT (Incl the Project)	836,987	17.10%	988,804	18.01%	1,155,829	18.94%
Road	2,788,703	56.98%	3,029,535	55.18%	3,252,560	53.31%
Cycle	123,403	2.52%	150,012	2.73%	179,738	2.95%

	2035		2050		2065	
Walk	1,145,113	23.40%	1,321,757	24.08%	1,513,657	24.81%
Total	4,894,206		5,490,107		6,101,784	

Mode share comparisons within the Project's area of influence in Scenario B are presented in Table 5.4. In 2035, PT mode share increases by 0.69 percentage points from 17.12% to 17.80%, whilst Road mode share decreases by 0.3 percentage points from 56.9% in the Do Minimum scenario, to 56.6% in the Do Something scenario. In 2050, PT mode share increases by 0.86 percentage points, from 18.69% to 19.54%, whilst Road mode share decreases by 0.4 percentage points from 55.12% to 54.73%. In 2065, PT mode share increases by 0.75 percentage points, from 19.51% to 20.26%, whilst Road mode share decreases by 0.31 percentage points from 53.46% to 53.16%.

Table 5.4: Scenario B DM -DS Summary of Mode Split within Area of Influence – 12 hours

	2035		2050		2065	
Do Minimum						
	12 hour (No. of Trips)	**% Mode Split**	**12 hour (No. of Trips)**	**% Mode Split**	**12 hour (No. of Trips)**	**% Mode Split**
PT	838,066	17.12%	1,029,182	18.69%	1,194,155	19.51%
Road	2,786,006	56.90%	3,036,194	55.12%	3,271,934	53.46%
Cycle	124,660	2.55%	143,782	2.61%	170,636	2.79%
Walk	1,147,663	23.44%	1,298,682	23.58%	1,483,217	24.24%
Total	4,896,395		5,507,840		6,119,941	
Do Something						
PT (Incl the Project)	875,139	17.80%	1,083,588	19.54%	1,243,315	20.26%
Road	2,782,673	56.60%	3,034,396	54.73%	3,261,464	53.16%
Cycle	121,239	2.47%	139,934	2.52%	165,473	2.70%
Walk	1,137,070	23.13%	1,286,860	23.21%	1,465,462	23.88%
Total	4,916,122		5,544,778		6,135,713	

Table 5.5 presents the percentage modal split for Terminal Workers, Office Workers, and Passengers at Dublin Airport in both the AM and PM peak hours in Scenario B 2035 (Scenario B Opening Year has higher boarding and

alighting figures than Scenario A Opening Year so analysis was completed for Scenario B only). The model indicates that private car has the highest mode share for workers in the office lands in the AM peak hour, whereas Terminal workers primarily travel by public transport. In the PM peak hour, Road has the highest mode share for both Terminal Workers and Office workers. The majority of Passengers travel by public transport in the AM peak hour, however in the PM peak hour, Road holds the highest mode share.

Table 5.5: Dublin Airport Modal Splits Scenario B 2035

Purpose	Mode	AM Peak Hour			PM Peak Hour		
		Airport Origin	Airport Destination	Total	Airport Origin	Airport Destination	Total
Workers Terminal	Cycle	0.0%	0.7%	0.4%	0.8%	0.0%	0.4%
	Walk	0.0%	0.6%	0.3%	0.6%	0.2%	0.4%
	PT (including Project)	54.1%	51.3%	52.7%	45.3%	44.0%	44.6%
	Road	45.6%	47.5%	46.5%	53.3%	55.8%	54.6%
Workers Offices (North and East)	Cycle	1.1%	2.7%	1.9%	3.1%	0.9%	2.0%
	Walk	9.3%	2.6%	5.9%	3.0%	8.5%	5.7%
	PT (including Project)	39.5%	28.4%	33.9%	28.4%	28.5%	28.5%
	Road	50.1%	66.4%	58.2%	65.4%	62.2%	63.8%
Total Workers	Cycle	24.9%	25.0%	25.0%	25.0%	25.0%	25.0%
	Walk	25.2%	25.5%	25.4%	25.6%	25.2%	25.4%
	PT (including Project)	27.5%	26.0%	26.8%	26.2%	27.3%	26.7%
	Road	23.9%	20.3%	22.1%	22.0%	23.4%	22.7%
Passengers	Cycle	0.0%	0.7%	0.4%	0.8%	0.0%	0.4%
	Walk	0.2%	0.6%	0.4%	0.6%	0.2%	0.4%
	PT (including Project)	54.1%	51.3%	52.7%	45.3%	44.0%	44.6%
	Road	45.6%	47.5%	46.5%	53.3%	55.8%	54.6%

5.3.5 Park and Ride

The main changes in link flows, as a result of the Project, are on the road network to the north of Swords, as a result of the Estuary Park and Ride facility. Figure 5.7 to Figure 5.9 below shows the AADT traffic flow differences between the Do Something and Do Minimum scenario in Scenario A, with Figure 5.10 to Figure 5-12 illustrating the same for Scenario B.

In Scenario A in 2035, the largest reductions can be seen on the M1, where there are reductions of over 5,000 AADT. These reductions can be seen along the M1 to Dublin Airport, with reductions of up to 2,500 AADT along the M50. Along the R132, there are reductions of between 2,500 and 5,000 AADT. Increases of up to 2,000 AADT can be seen on the On and Off-slips at the M1 Lissenhall Junction, which is in close proximity to the Estuary Park and Ride facility. In 2050 and 2065, the R132 sees further reductions of over 5,000 AADT when the Project is in place. The Port Tunnel sees reductions of between 2,500 and 5,000 AADT. Large reductions of over 5,000 AADT continue to be seen along the M1 to Dublin Airport and onto the M50.

In Scenario B 2035, the M1 in the Swords area sees reductions of up to 2,500 AADT, however there are reductions of over 5,000 AADT at the Dublin Airport/M1 Junction. In 2050 and 2065, these reductions are lower, reducing by up to 1,000 AADT along the R132.

The Lissenhall Junction (South) is predicted to operate within capacity overall under the 2035 Do Something AM peak hour scenarios. The M1 Southbound Off Ramp will increase from 72.0% in the Do Minimum scenario to 75.6% in the Do-Scheme scenario, resulting in queues remaining consistent from 13 pcus to 12 pcus. Assuming 1 pcu is 5.75m, the queue in the Do-Scheme scenario will be approximately 69m in length across two lanes. The length of the predicted queue will not extend to the bottom of the off-ramp, or the nose of the diverge slip.

The R126 Hearse Road will increase from 90.6% in the Do Minimum scenario to 106.3% in the Do Something scenario. The R132 Swords Road Southbound is expected to reach capacity in the Do Something Scenario, however the predicted queues do not reach as far back as the next junction. R132 Northbound is predicted to operate within capacity. Although the R132 Swords Road Southbound and R126 Hearse Road are predicted to experience a high degree of saturation during the AM peak hour, it is also expected that these will operate within acceptable saturation and queueing levels during the rest of the day.

With the addition of the Park & Ride traffic, under the 2035 Do Something PM peak hour scenario, the M1 Northbound Off Ramp arm of the south junction is predicted to operate within its practical capacity. The M1 Northbound Off Ramp will decrease from 84.5% in the Do Minimum scenario to 77.8% in the Do Something scenario. This will result in queues decreasing from 15 pcus in the Do-Minimum to 14 pcus (maximum 81m) in the Do Something.

The results show that the proposed Estuary Park & Ride accesses are predicted to operate within capacity during the AM peak hour 2035 Operational Phase, and in the 2050 Operational Phase. In the PM peak hour, the North Access Road exceeds practical capacity. Overall queue of 35 pcus (202m) is predicted on the R132 Southbound approach to the north junction, during the Weekday AM peak hour. The left entry lane from the new Park & Ride link road into the Park & Ride is predicted to experience a queue of 14 pcus (79m).

Due to the level of departures from the Park & Ride, during the PM peak period, eastbound queue of 57 pcus (324m) is predicted on the new link road between the P&R entrance and the R132 Swords Road.

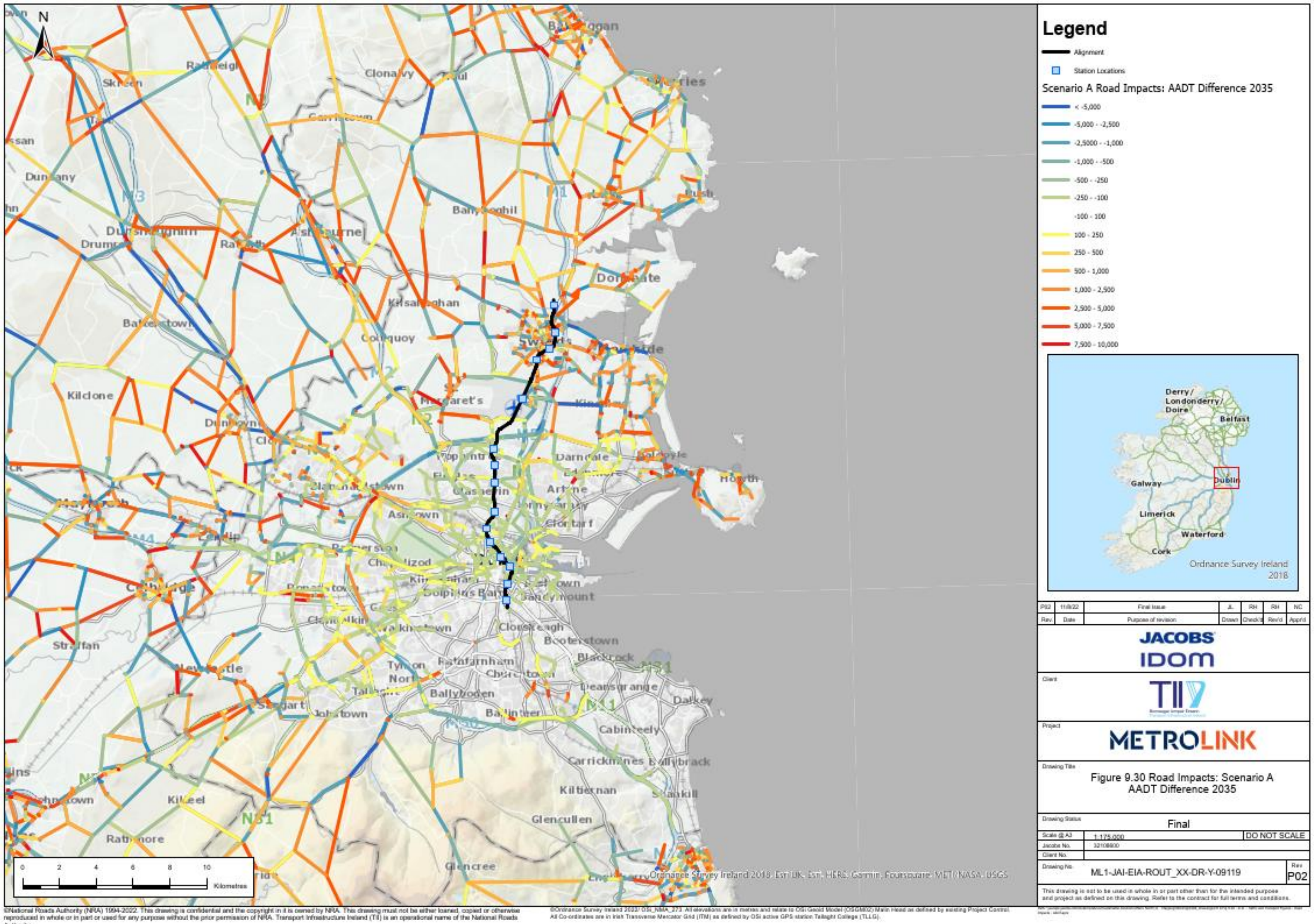

Figure 5.7: Change in AADT Scenario A 2035 DS – DM

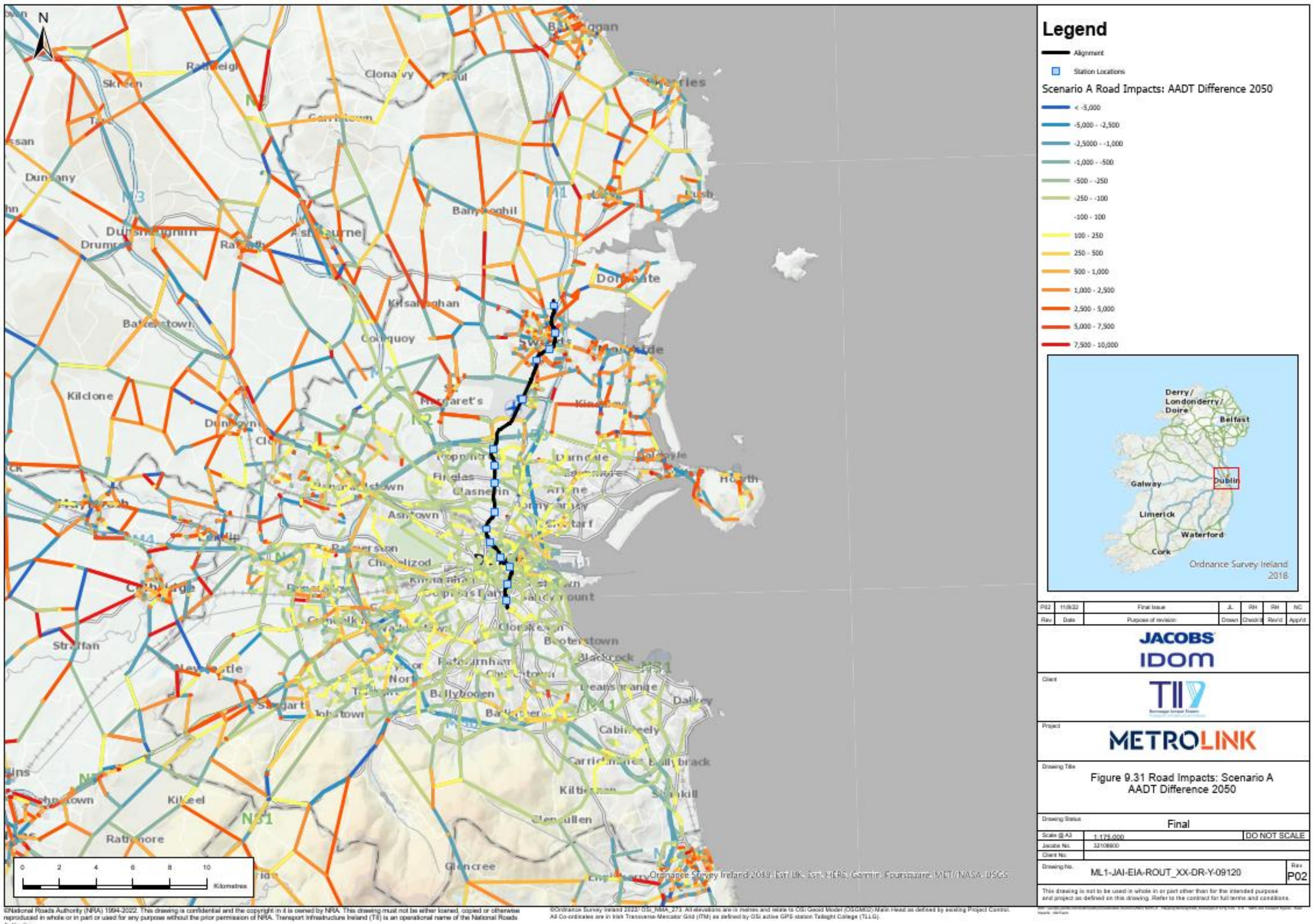

Figure 5.8: Change in AADT Scenario A 2050 DS – DM

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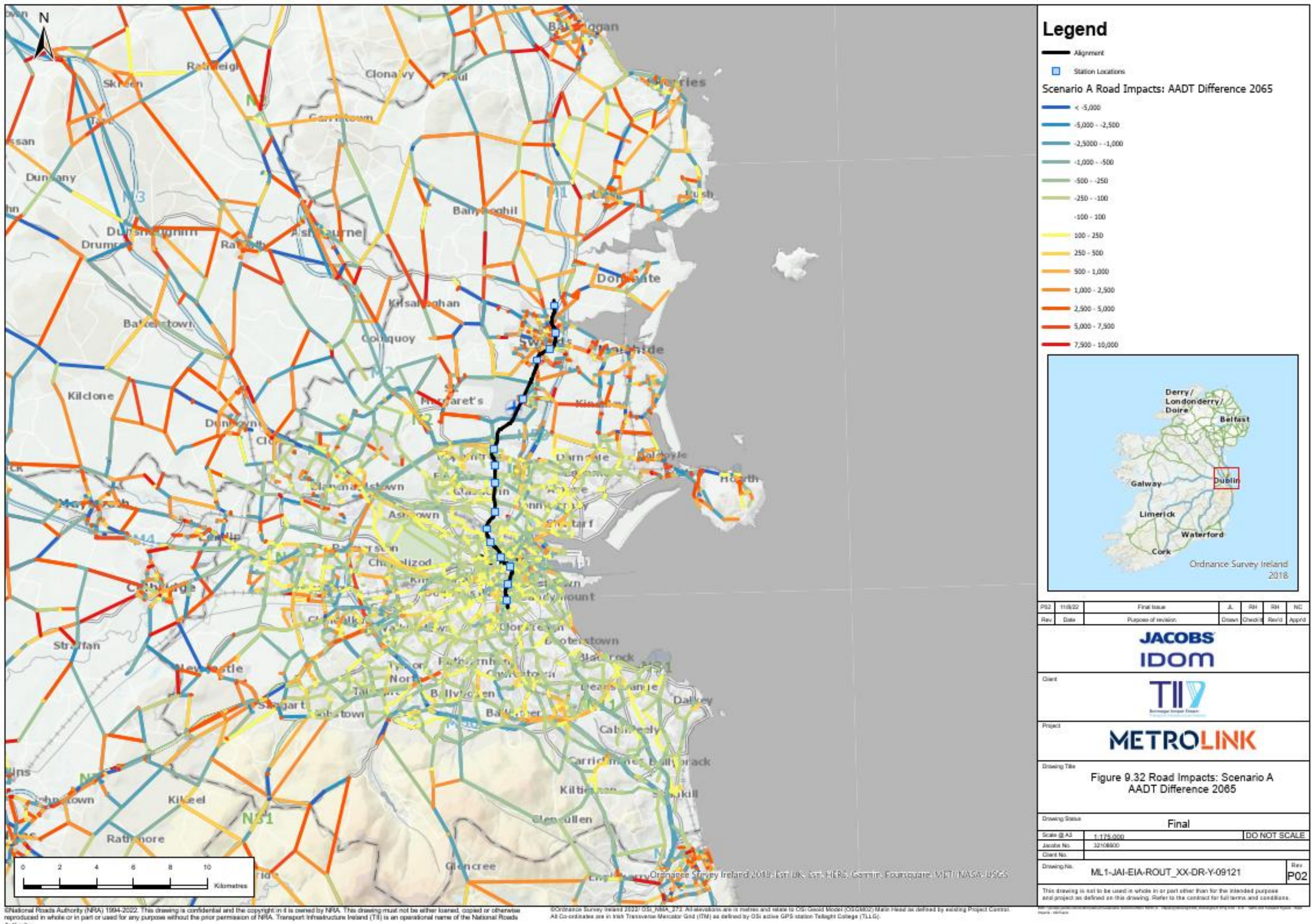

Figure 5.9: Change in AADT Scenario A 2065 DS – DM

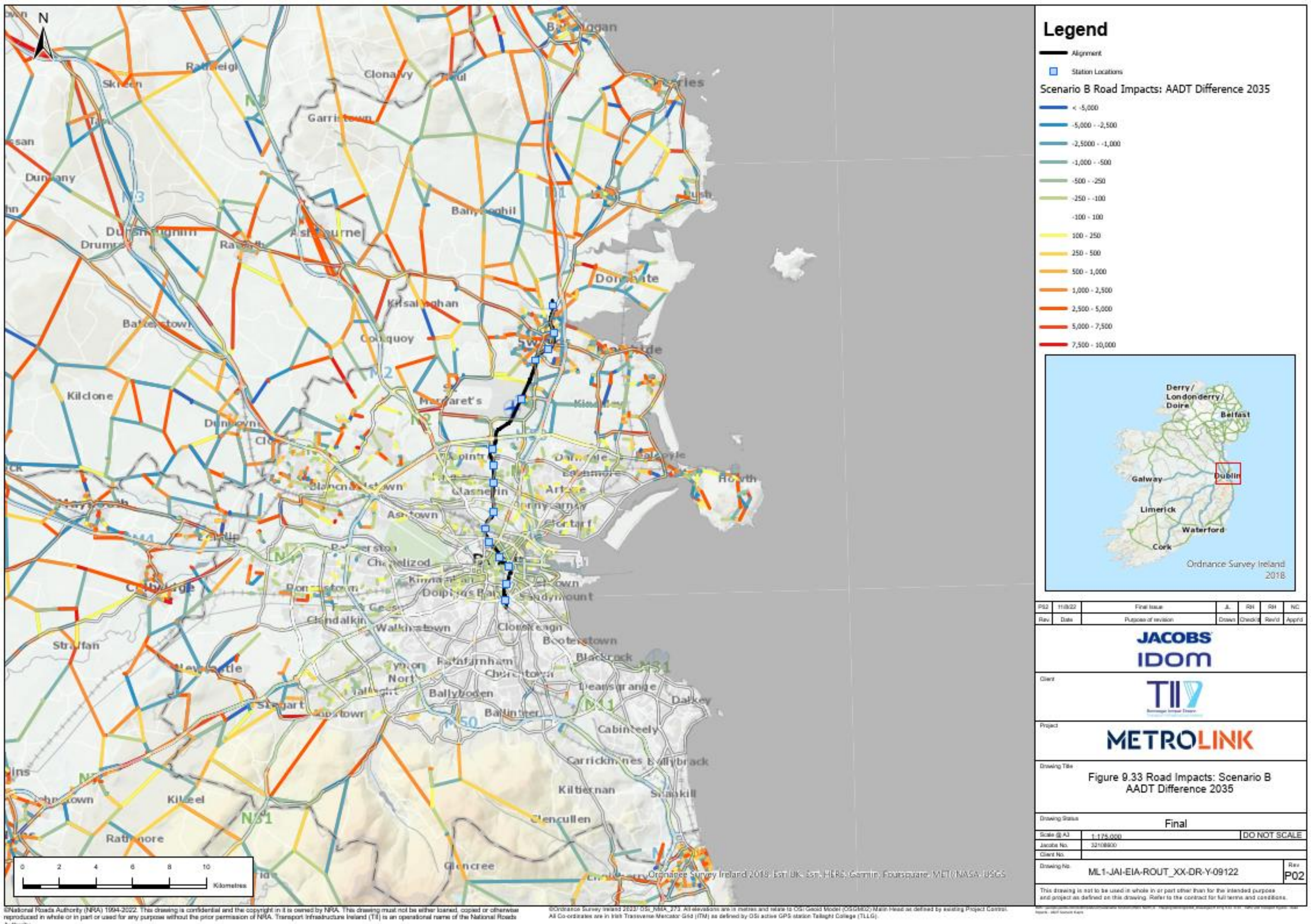

Figure 5.10: Change in AADT Scenario B 2035 DS – DM

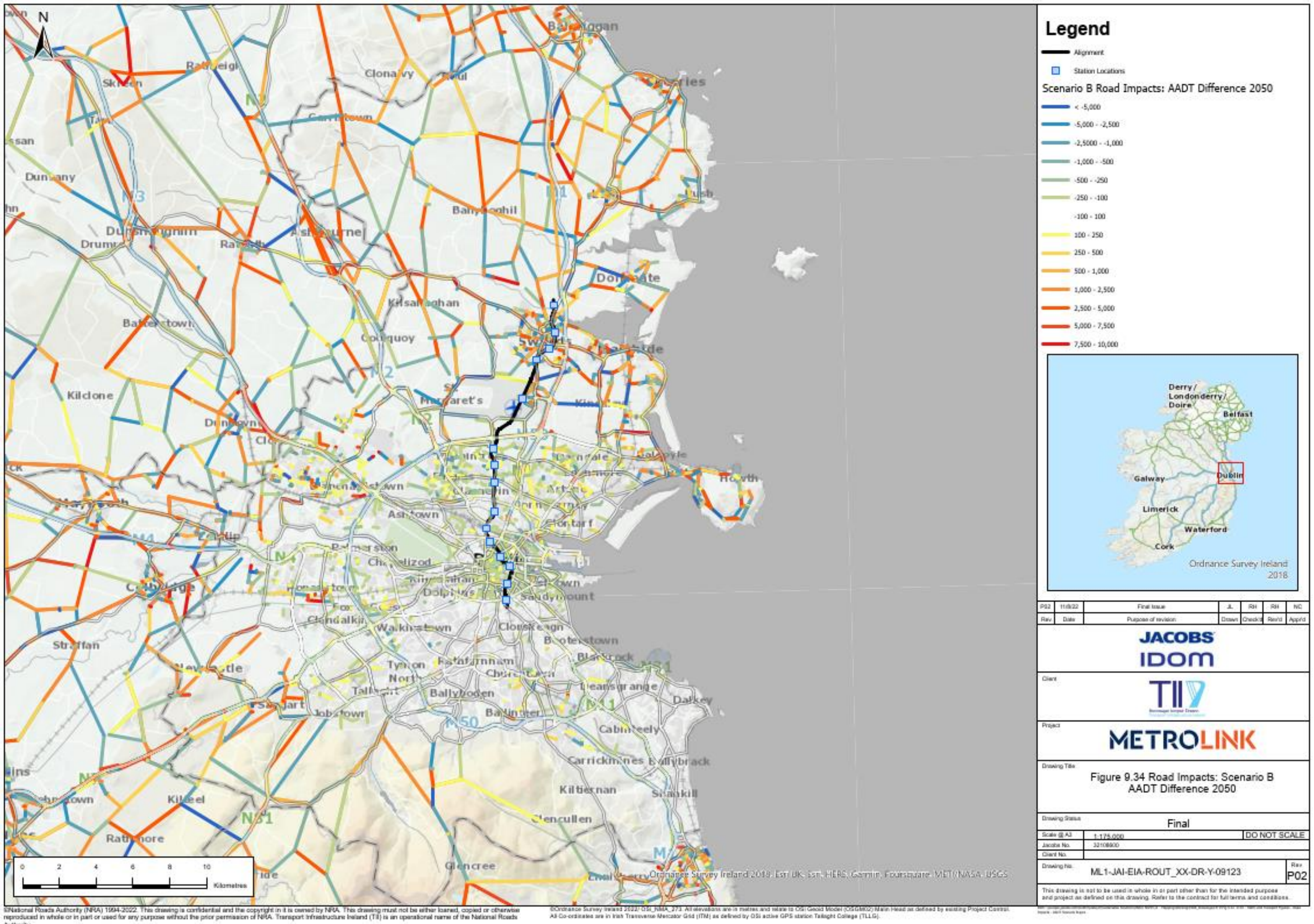

Figure 5.11: Change in AADT Scenario B 2050 DS – DM

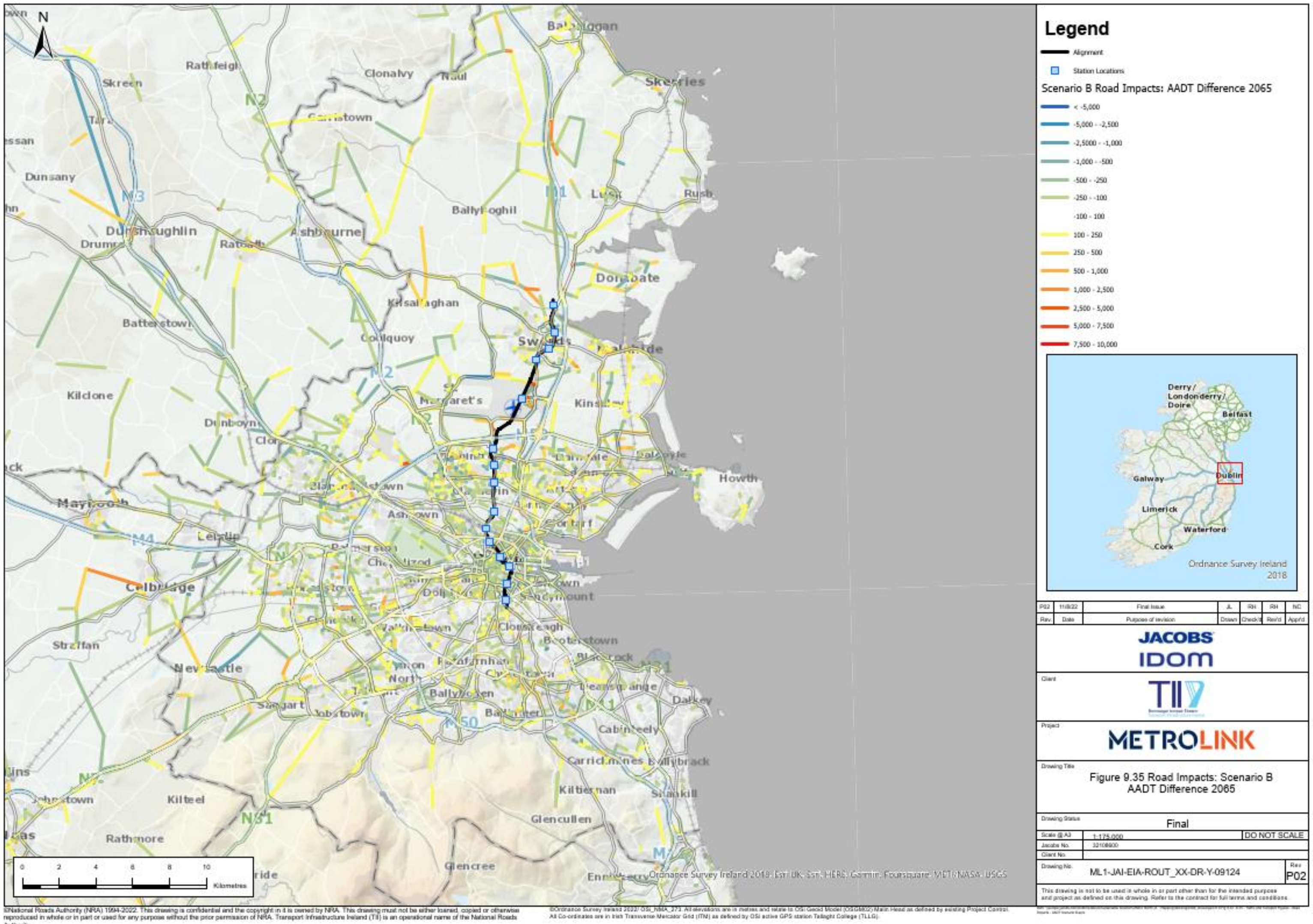

Figure 5.12: Change in AADT Scenario B 2065 DS – DM

6. Impact Assessment

6.1 Public Transport

This section will present the impacts to the public transport network during the operational phase of the proposed Project. The impacts on public transport journey times, mode share, public transport accessibility and network statistics for both Scenario A and Scenario B are presented.

6.1.1 Public Transport Journey Times

End-to-end public transport (public transport – only journeys, including interchange between the proposed Project and other public transport modes) journey time comparisons between the Do Minimum and Do Something scenarios has been undertaken to investigate benefits to journey time with the proposed Project in place in both Scenario A and Scenario B. The assessment was carried out from zones located across the city as illustrated in Figure 6.1 and Table 6.1.

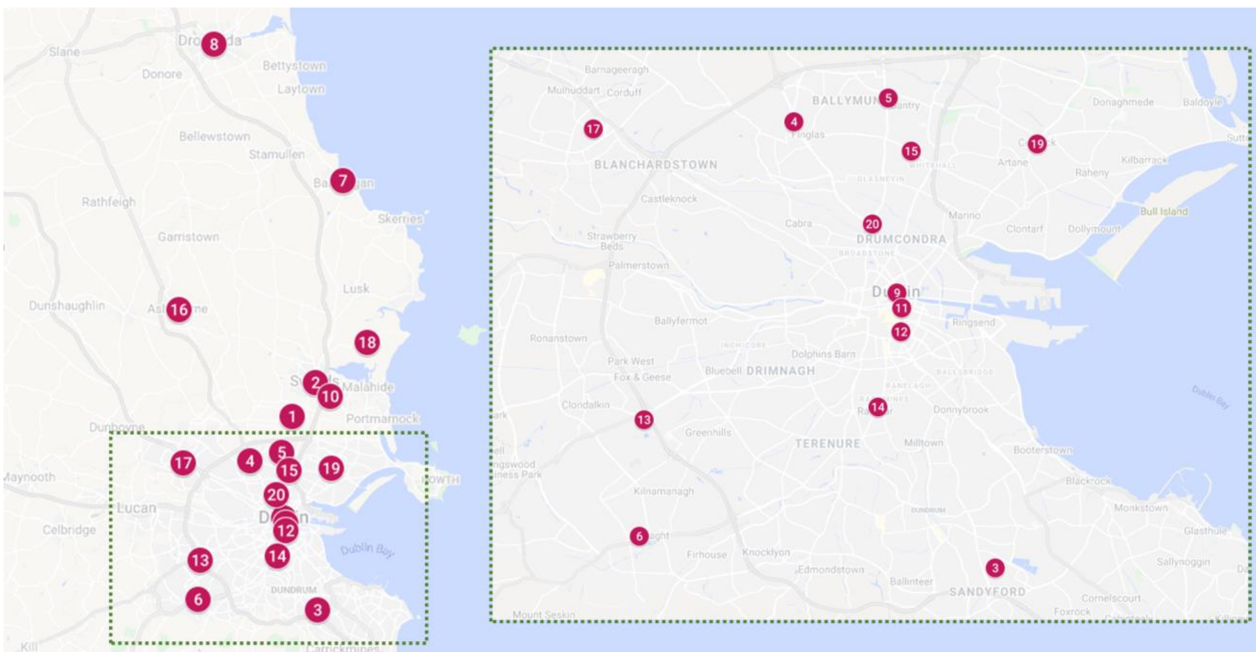

Figure 6.1: Zones assessed for public transport journey time

Table 6.1: Zones assessed for public transport journey time

Nb	Location	Nb	Location	Nb	Location	Nb	Location
1	Dublin Airport	**6**	Tallaght	**11**	College Street	**16**	Ashbourne
2	Swords Pavilion	**7**	Balbriggan	**12**	St. Stephen's Green	**17**	Blanchardstown
3	Sandyford	**8**	Drogheda	**13**	Red Cow	**18**	Donabate
4	Finglas	**9**	O'Connell Street	**14**	Rathgar	**19**	Coolock
5	Ballymun	**10**	Sword East	**15**	DCU	**20**	Glasnevin

Comparisons between Do Minimum and Do Something scenarios in both the AM and PM peak periods are presented in Table 6.2 to Table 6.13 for 2035, 2050 and 2065.

Table 6.2: Scenario A 2035 AM Peak - Journey Time Comparisons (minutes) between Do Minimum and Do Something

Journey Time 2035 DS - 2035 DM Scenario A AM Peak Period	O'Connell Street	St. Stephen's Green	College Street (Trinity)	Glasnevin	DCU	Rathgar Road	Coolock	Ballymun	Finglas	Sandyford	Tallaght	Red Cow	Blanchardstown	Ashbourne	Donabate	Balbriggan	Drogheda	Swords Pavilion	Swords East	Dublin Airport
O'Connell Street	0.0	0.0	0.0	-3.7	-12.0	0.0	0.0	-14.9	-3.0	0.0	-0.1	-0.1	-1.0	-0.8	0.0	0.0	0.0	-19.3	0.0	-20.5
St. Stephen's Green	0.0	0.0	0.0	-2.7	-10.1	0.0	0.0	-14.1	-1.1	0.0	-0.1	-0.1	-1.5	-2.9	0.0	0.0	0.0	-20.3	-1.0	-21.1
College Street (Trinity)	0.0	-0.1	0.0	-1.1	-7.6	0.0	0.0	-11.5	0.1	0.0	-0.1	-0.1	-0.1	-0.6	0.0	0.0	0.0	-12.7	3.2	-15.1
Glasnevin	-4.6	-9.6	-0.6	0.0	-0.1	-12.4	-12.2	0.9	0.0	-17.7	0.0	0.0	-13.7	-0.6	-6.5	-12.6	0.3	-39.3	-23.2	-24.3
DCU	-5.4	-11.1	-4.0	0.0	0.0	-14.2	0.0	0.0	0.0	-17.2	-1.9	-2.1	0.4	-0.6	-19.0	-14.9	0.3	-22.2	-21.6	-14.8
Rathgar Road	0.0	0.0	0.1	-9.8	-15.1	0.0	-2.2	-20.4	-9.3	0.0	0.1	0.1	-6.7	-6.6	-0.3	-3.1	-2.6	-26.1	1.5	-28.0
Coolock	-0.1	-0.1	-0.1	-4.8	0.0	-2.1	0.0	0.0	0.0	-1.3	0.0	0.0	0.0	-2.7	0.0	0.0	0.3	-10.6	0.0	-1.9
Ballymun	-11.2	-17.0	-9.7	1.3	0.1	-19.9	0.0	0.0	-0.2	-23.0	-7.7	-7.9	-15.4	-0.6	-15.8	-16.8	-0.8	-19.5	-18.9	-12.1
Finglas	-1.2	-4.7	-0.1	0.1	-0.1	-12.8	-0.1	0.0	0.0	-13.0	3.5	3.4	-0.2	-0.5	-6.8	-19.5	0.2	-23.6	-13.5	-16.4
Sandyford	0.0	0.1	0.0	-8.5	-13.6	0.0	0.1	-18.9	-5.1	0.0	1.0	-0.1	-1.7	-6.5	-0.2	-0.2	-0.3	-27.7	-6.2	-26.8
Tallaght	0.0	0.0	0.0	-0.2	-9.7	0.0	0.0	-10.3	3.2	0.0	0.0	0.0	1.0	-1.3	0.0	0.0	0.0	-16.4	1.0	-9.0
Red Cow	0.0	0.0	0.0	-0.1	-6.5	-0.2	-0.1	-10.3	3.2	0.2	0.0	0.0	-0.1	-1.2	0.0	0.0	0.0	-14.6	2.4	-1.0
Blanchardstown	0.7	-0.7	0.0	-14.6	-6.5	-1.4	-0.1	-13.9	0.1	-2.0	0.0	0.0	0.0	-2.6	-0.1	-0.1	0.2	-26.2	-6.3	-22.6
Ashbourne	-0.7	-0.8	-0.8	-0.6	0.0	-1.8	-1.2	-0.8	-0.6	-2.3	-0.1	-0.1	-6.8	0.0	2.5	2.2	2.2	1.6	1.5	2.8
Donabate	0.0	0.0	0.0	-5.2	-16.4	0.7	0.0	-19.0	-14.6	-1.6	0.0	0.0	0.0	0.9	0.0	0.0	0.0	1.3	0.3	-8.4
Balbriggan	0.6	0.6	0.6	-7.4	-10.4	0.6	0.6	-19.1	-5.3	-1.1	0.6	0.6	0.6	5.6	0.0	0.0	0.4	6.1	-5.1	4.8
Drogheda	0.0	0.0	0.0	0.9	2.7	0.6	2.7	1.6	2.8	-1.7	0.0	0.0	0.0	1.4	0.0	0.3	0.0	-10.7	-0.3	2.8
Swords Pavilion	-19.9	-21.2	-12.1	-48.5	-21.9	-24.4	-13.8	-21.5	-26.5	-29.2	-14.4	-14.0	-31.0	-0.4	0.6	0.7	-3.3	0.0	-0.1	-15.7
Swords East	0.4	1.8	4.2	-24.5	-22.8	2.2	4.7	-22.5	-26.2	-7.4	3.0	3.0	-11.9	-0.4	-0.8	0.7	0.0	0.0	0.0	-16.6
Dublin Airport	-20.5	-14.0	-9.8	-30.0	-9.4	-19.8	-0.9	-8.7	-6.5	-29.7	13.5	10.7	-26.7	-6.3	-0.4	0.1	-0.4	-9.9	-8.5	0.0

Table 6.3: Scenario A 2035 PM Peak – Journey Time Comparisons (minutes) between Do Minimum and Do Something

Journey Time 2035 DS - 2035 DM Scenario A PM Peak Period	O'Connell Street	St. Stephen's Green	College Street (Trinity)	Glasnevin	DCU	Rathgar Road	Coolock	Ballymun	Finglas	Sandyford	Tallaght	Red Cow	Blanchardstown	Ashbourne	Donabate	Balbriggan	Drogheda	Swords Pavilion	Swords East	Dublin Airport
O'Connell Street	0.0	0.0	0.0	-3.4	-12.4	0.0	-0.2	-16.0	-6.6	0.0	0.0	0.0	-1.3	0.8	-2.6	0.0	0.0	-23.2	-5.6	-18.0
St. Stephen's Green	0.1	0.0	0.0	-2.2	-10.7	-0.1	-0.1	-14.7	-1.4	0.0	0.0	0.0	-2.5	1.8	0.0	0.6	0.0	-24.3	-7.1	-19.6
College Street (Trinity)	0.0	0.0	0.0	-1.1	-9.3	0.0	-0.2	-12.5	1.2	0.0	0.0	0.0	0.0	0.8	0.0	0.6	0.0	-16.6	0.6	-10.7
Glasnevin	-2.5	-7.3	-0.1	0.0	-0.3	-11.9	-14.6	0.4	0.0	-15.3	0.3	0.3	-13.1	0.9	-10.3	-6.6	-13.5	-42.3	-27.5	-24.8
DCU	-3.9	-9.0	-2.4	0.0	0.0	-12.4	-0.1	0.0	0.0	-15.8	-0.3	-0.3	-5.5	1.0	-17.3	-11.6	5.4	-24.9	-18.9	-15.8
Rathgar Road	0.1	0.0	0.1	-8.7	-14.0	0.0	-1.8	-21.0	-9.5	0.0	-0.3	0.0	-6.5	1.1	-0.1	0.2	-1.5	-28.1	-2.8	-24.8
Coolock	0.0	0.0	0.0	-9.2	0.0	-1.5	0.0	0.0	-0.1	-1.2	0.0	0.0	-0.2	0.8	-2.6	0.0	0.0	2.1	0.1	0.3
Ballymun	-9.7	-14.8	-8.1	1.3	0.0	-18.2	0.1	0.0	0.0	-21.6	-6.2	-6.2	-14.1	0.8	-17.9	-15.6	-10.4	-20.5	-11.4	-11.5
Finglas	-0.1	-1.9	0.1	0.0	-1.9	-6.8	-2.0	-0.1	0.0	-8.5	1.8	1.8	0.3	0.8	-6.1	-3.6	0.9	-26.1	-16.4	-5.5
Sandyford	0.0	0.0	-0.1	-8.9	-15.8	0.0	-0.4	-20.8	-6.4	0.0	0.3	0.0	-2.1	0.4	-0.5	-0.1	-2.3	-32.3	-12.1	-25.8
Tallaght	-0.1	-0.1	-0.1	-0.1	-7.3	-0.3	-0.2	-11.2	1.7	-0.7	0.0	0.0	0.2	0.8	-2.7	0.1	-0.1	-19.2	-1.8	-14.5
Red Cow	-0.1	-0.1	-0.1	-0.1	-7.3	-0.1	-0.3	-11.2	1.9	0.0	0.0	0.0	-1.5	0.8	-2.7	0.1	-0.1	-18.8	-1.6	5.7
Blanchardstown	0.6	-0.7	-0.2	-14.6	-2.4	-1.2	-0.2	-9.2	-0.5	-2.3	3.3	0.0	0.0	0.1	-2.6	0.0	0.0	-35.0	-16.6	-23.3
Ashbourne	0.1	0.1	0.1	0.1	-1.3	-0.5	-1.2	0.5	0.1	-0.8	0.4	0.4	-9.1	0.0	1.1	3.1	0.3	0.0	0.0	-2.2
Donabate	0.0	0.0	0.0	-8.8	-14.4	2.5	-0.3	-14.0	-13.6	-3.3	0.0	0.0	-0.2	2.2	0.0	0.0	0.0	0.5	0.0	-0.9
Balbriggan	-1.4	-0.4	0.0	-18.0	-11.9	-3.6	0.0	-18.4	-20.0	-11.2	0.8	0.5	-1.7	1.6	0.0	0.0	0.0	0.3	-0.5	0.4
Drogheda	-9.5	0.0	0.0	-22.7	12.2	-8.6	-0.1	-16.4	-7.0	-16.6	-0.1	-0.2	-0.2	0.1	0.0	0.1	0.0	-9.9	0.2	0.0
Swords Pavilion	-25.0	-24.3	-18.7	-41.6	-16.7	-27.4	-7.6	-16.1	-21.5	-32.6	-20.8	-20.1	-35.3	1.7	1.3	3.6	-10.1	0.0	0.0	-10.6
Swords East	-0.5	0.3	3.2	-24.2	-13.3	-1.7	0.3	-12.7	-21.1	-8.5	2.1	1.7	-10.4	1.7	0.0	2.3	0.0	0.0	0.0	-10.7
Dublin Airport	-20.7	-17.3	-11.5	-22.2	-9.1	-32.1	-0.1	-8.5	-5.5	-33.0	19.0	7.3	-27.7	-13.4	-2.3	1.8	1.1	-10.2	-1.7	0.0

Table 6.4: Scenario A 2050 AM Peak - Journey Time Comparisons (minutes) between Do Minimum and Do Something

Journey Time 2050 DS - 2050 DM Scenario A AM Peak Period	O'Connell Street	St. Stephen's Green	College Street (Trinity)	Glasnevin	DCU	Rathgar Road	Coolock	Ballymun	Finglas	Sandyford	Tallaght	Red Cow	Blanchardstown	Ashbourne	Donabate	Balbriggan	Drogheda	Swords Pavilion	Swords East	Dublin Airport
O'Connell Street	0.0	-0.1	0.0	-3.5	-11.6	0.1	0.3	-15.3	-2.1	0.0	-0.1	-0.1	-1.0	-1.4	0.0	0.0	0.0	-20.9	-1.8	-19.5
St. Stephen's Green	0.0	0.0	0.0	-2.5	-10.6	0.0	0.3	-14.5	-0.5	0.0	-0.1	-0.1	-1.7	-3.4	0.0	0.0	0.0	-22.0	-2.9	-22.7
College Street (Trinity)	0.0	0.0	0.0	-0.9	-7.8	0.1	0.3	-12.0	0.5	0.0	-0.1	-0.1	0.0	-1.2	0.0	0.0	0.0	-14.2	2.2	-17.1
Glasnevin	-4.4	-9.4	-1.3	0.0	-0.1	-12.9	-11.7	0.8	0.3	-17.9	-0.1	-0.1	-13.7	-1.3	-6.3	-12.1	4.4	-38.8	-25.0	-24.4
DCU	-5.4	-11.2	-3.9	0.1	0.0	-14.2	0.1	0.0	-0.2	-17.2	-1.9	-2.1	-1.5	-2.2	-19.0	-14.8	-0.9	-22.7	-22.3	-15.5
Rathgar Road	0.0	0.0	0.1	-9.5	-14.5	0.0	-1.9	-20.8	-8.6	0.0	0.1	0.1	-8.8	-10.4	-0.3	-0.4	-1.3	-27.9	-0.2	-29.1
Coolock	0.3	0.4	0.4	-4.4	0.1	-2.1	0.0	-0.3	-0.1	-1.1	0.4	0.5	0.4	-4.5	0.4	0.4	-0.9	-10.4	0.4	-1.7
Ballymun	-11.1	-16.9	-9.6	1.5	0.1	-19.9	0.0	0.0	-0.2	-22.9	-7.7	-7.8	-15.4	-2.0	-16.3	-19.2	-2.0	-19.4	-18.9	-12.1
Finglas	0.6	-4.4	1.2	0.3	-0.1	-13.2	-0.1	0.1	0.0	-12.7	3.6	3.6	0.1	-1.5	-6.0	-18.8	-1.1	-23.8	-23.1	-17.1
Sandyford	0.0	0.1	0.0	-8.0	-13.7	0.0	0.4	-19.0	-4.1	0.0	-15.1	-0.1	-1.9	-9.7	-0.2	-0.2	0.0	-29.0	-8.1	-27.4
Tallaght	-0.1	0.0	-0.1	1.1	-10.3	-0.2	0.2	-10.9	3.5	-0.6	0.0	0.0	0.3	-1.7	0.0	-0.1	-0.1	-17.8	-0.2	-15.8
Red Cow	0.0	0.0	-0.1	0.1	-7.0	0.4	0.2	-10.9	3.5	0.2	0.0	0.0	0.0	-1.7	0.0	0.0	0.0	-16.0	1.4	-6.6
Blanchardstown	0.5	-0.7	0.7	-14.6	-7.1	-1.4	0.1	-14.9	0.2	-2.0	0.1	0.1	0.0	3.3	-0.2	-0.2	-0.2	-27.9	-8.2	-21.6
Ashbourne	-1.2	-1.2	-1.2	-1.3	-0.9	-2.6	-1.8	-1.5	-1.5	-3.0	-0.7	-0.7	-10.4	0.0	2.1	2.1	1.8	1.7	1.7	3.8
Donabate	1.9	0.0	0.0	-6.1	-11.6	1.0	2.2	-18.6	-12.3	-1.7	1.9	1.9	1.9	0.3	0.0	0.0	0.0	0.9	0.0	-9.1
Balbriggan	0.0	-0.6	-0.6	-8.1	-10.8	0.6	0.3	-23.4	-4.2	-2.3	0.0	0.0	0.0	2.7	0.1	0.0	-0.1	6.1	-0.1	5.0
Drogheda	0.1	0.1	0.1	-0.1	2.0	1.0	2.0	2.1	1.8	-1.6	0.1	0.1	0.1	-0.2	-0.1	-0.2	0.0	-8.3	-0.2	2.1
Swords Pavilion	-20.4	-21.7	-12.6	-47.6	-22.0	-25.0	-13.6	-21.6	-27.3	-29.8	-14.9	-14.5	-31.6	-0.6	0.0	0.4	-4.1	0.0	0.0	-15.5
Swords East	-0.1	1.3	3.9	-24.9	-23.0	1.5	5.2	-22.6	-25.7	-8.1	2.7	2.7	-12.4	-0.6	-0.7	0.4	-0.7	0.0	0.0	-16.5
Dublin Airport	-20.6	-14.9	-10.1	-30.6	-9.4	-21.2	-0.7	-8.7	-6.9	-29.2	4.3	10.6	-27.5	-5.5	-0.7	0.5	-0.2	-10.0	-8.5	0.0

Table 6.5: Scenario A 2050 PM Peak – Journey Time Comparisons (minutes) between Do Minimum and Do Something

Journey Time 2050 DS - 2050 DM Scenario A PM Peak Period	O'Connell Street	St. Stephen's Green	College Street (Trinity)	Glasnevin	DCU	Rathgar Road	Coolock	Ballymun	Finglas	Sandyford	Tallaght	Red Cow	Blanchardstown	Ashbourne	Donabate	Balbriggan	Drogheda	Swords Pavilion	Swords East	Dublin Airport
O'Connell Street	0.0	0.0	0.0	-3.3	-12.0	-0.1	0.3	-15.9	-3.9	0.0	0.0	0.0	-1.3	0.3	0.0	0.0	0.0	-27.7	-10.2	-22.5
St. Stephen's Green	0.0	0.0	0.0	-2.1	-10.7	0.0	0.4	-14.7	-1.0	0.0	0.0	0.0	-2.6	0.9	0.0	0.7	0.0	-28.8	-11.6	-24.7
College Street (Trinity)	0.0	0.0	0.0	-1.0	-9.4	-0.1	0.3	-12.5	1.3	0.0	0.0	0.0	-0.1	0.2	0.0	0.7	0.0	-21.1	-3.5	-17.0
Glasnevin	-2.5	-7.3	-0.1	0.0	-0.3	-12.0	-13.7	0.4	0.4	-15.5	0.3	0.3	-13.4	0.5	-7.3	-6.7	-10.6	-43.1	-29.5	-27.3
DCU	-4.1	-9.1	-2.5	0.1	0.0	-12.6	0.2	0.1	-0.1	-15.9	-0.4	-0.4	-8.6	-0.5	-16.3	-14.4	-3.6	-26.4	-21.9	-17.8
Rathgar Road	0.2	0.1	0.2	-8.4	-13.3	0.0	-1.3	-20.7	-8.4	0.0	-0.3	-1.9	-6.6	-0.5	0.0	0.3	-0.1	-33.4	-7.6	-30.2
Coolock	0.5	1.5	1.5	-9.5	0.1	-1.0	0.0	0.0	0.0	-0.9	1.0	0.9	0.3	0.2	0.4	0.4	0.4	3.7	-0.4	-1.4
Ballymun	-9.8	-15.0	-8.3	1.4	0.0	-18.4	-0.6	0.0	0.0	-21.8	-6.4	-6.4	-14.3	0.1	-19.0	-17.9	-12.5	-21.8	-14.5	-12.9
Finglas	0.2	-1.5	0.5	0.2	-0.1	-6.6	0.0	0.0	0.0	-8.2	2.1	2.0	-0.1	0.2	-4.5	-3.4	14.9	-26.2	-21.0	-11.3
Sandyford	0.0	0.1	-0.1	-8.3	-15.9	0.0	0.2	-20.7	-5.8	0.0	0.3	-0.1	-2.2	-4.2	-0.4	0.3	-0.6	-36.8	-16.7	-29.7
Tallaght	-0.1	-0.1	-0.1	0.1	-7.0	0.1	0.3	-10.6	2.3	-0.1	0.0	0.0	-2.6	0.4	-0.1	-0.1	0.0	-23.4	-5.9	-17.3
Red Cow	-0.1	-0.1	-0.1	0.1	-6.9	-0.1	0.2	-10.6	2.4	-0.1	0.0	0.0	-1.8	0.4	-0.1	-0.1	0.0	-23.0	-5.5	1.3
Blanchardstown	0.6	-0.7	0.6	-14.6	-2.2	-1.2	0.3	-9.5	0.0	-4.8	-0.3	-0.3	0.0	0.9	0.0	0.0	0.0	-38.5	-20.9	-27.7
Ashbourne	1.6	1.6	1.6	1.5	2.2	1.0	0.9	2.7	1.4	0.7	1.9	1.9	-8.9	0.0	0.7	3.2	0.4	-0.1	-0.1	-6.5
Donabate	0.0	0.0	0.0	-8.6	-15.1	2.4	0.2	-14.2	-18.7	-3.2	0.0	-0.1	0.0	2.8	0.0	0.0	0.0	0.4	-0.1	-1.3
Balbriggan	-0.9	-0.2	0.0	-17.2	-11.6	-3.2	0.1	-19.0	-23.5	-10.6	0.6	0.3	-1.1	1.1	0.0	0.0	0.0	0.1	-0.2	-1.9
Drogheda	0.0	0.0	0.0	-21.9	11.7	-8.1	0.1	-18.8	8.7	-7.2	-0.1	-0.1	0.0	-0.2	0.0	0.1	0.0	-10.4	0.1	-2.2
Swords Pavilion	-26.7	-25.9	-20.3	-40.8	-17.4	-28.7	-8.0	-16.6	-23.3	-34.7	-22.1	-21.4	-36.2	2.3	0.9	3.3	-9.7	0.0	0.1	-11.0
Swords East	-1.3	-0.9	0.7	-24.9	-14.0	-2.8	0.1	-13.2	-22.3	-9.5	1.1	0.7	-11.3	2.3	0.1	1.5	0.1	0.0	0.0	-11.2
Dublin Airport	-20.1	-17.9	-12.2	-22.4	-9.5	-31.5	-0.2	-8.6	-7.8	-32.6	11.9	5.0	-29.2	-3.6	-2.3	1.4	0.4	-10.2	-3.6	0.0

Table 6.6: Scenario A 2065 AM Peak – Journey Time Comparisons (minutes) between Do Minimum and Do Something

Journey Time 2065 DS - 2065 DM Scenario A AM Peak Period	O'Connell Street	St. Stephen's Green	College Street (Trinity)	Glasnevin	DCU	Rathgar Road	Coolock	Ballymun	Finglas	Sandyford	Tallaght	Red Cow	Blanchardstown	Ashbourne	Donabate	Balbriggan	Drogheda	Swords Pavilion	Swords East	Dublin Airport
O'Connell Street	0.0	-0.1	0.0	-3.7	-11.3	0.1	0.5	-16.1	-2.3	0.0	-0.1	-0.1	-1.1	-0.9	0.0	0.0	0.0	-23.3	-4.2	-20.8
St. Stephen's Green	0.0	0.0	0.0	-2.7	-12.4	0.1	0.5	-15.3	-0.4	0.0	-0.1	-0.1	-7.6	-3.2	0.0	0.0	0.0	-24.8	-5.6	-24.4
College Street (Trinity)	0.0	0.0	0.0	-1.0	-8.4	0.2	0.5	-12.8	0.7	0.0	-0.1	-0.1	-0.1	-0.7	0.0	0.0	0.1	-16.7	0.9	-18.9
Glasnevin	-5.2	-10.4	-1.1	0.0	0.0	-13.4	-11.4	0.7	0.2	-18.5	-0.2	-0.2	-13.7	-0.8	-6.2	-12.0	2.3	-39.8	-27.6	-25.4
DCU	-5.7	-11.6	-4.2	0.1	0.0	-14.5	0.1	0.0	-0.3	-17.5	-2.2	-2.4	-4.5	-3.0	-19.3	-18.3	-1.3	-24.6	-24.1	-17.4
Rathgar Road	0.1	0.2	0.1	-9.7	-14.0	0.0	-2.1	-21.6	-8.6	0.0	0.2	0.2	-9.8	-10.5	0.0	-1.0	-0.9	-30.6	-2.8	-30.4
Coolock	1.0	1.1	1.1	-4.3	0.1	-1.9	0.0	0.0	-0.2	-1.0	1.1	1.1	0.6	-4.1	0.6	0.6	-3.1	-11.0	1.5	-2.4
Ballymun	-11.5	-17.3	-10.0	1.6	0.1	-20.2	-0.1	0.0	-0.2	-23.3	-8.1	-8.2	-15.7	-2.7	-16.7	-20.9	-2.4	-19.7	-19.2	-12.4
Finglas	-1.4	-8.0	-0.7	0.1	-0.1	-15.3	0.0	-0.1	0.0	-14.9	3.4	3.3	-0.7	-1.2	-9.6	-21.3	-1.5	-24.6	-25.0	-18.3
Sandyford	0.0	0.1	0.0	-7.9	-13.8	0.0	0.6	-19.5	-4.2	0.0	-0.1	-0.1	-2.5	-10.2	-0.2	-0.2	0.0	-31.5	-10.8	-28.5
Tallaght	0.0	0.0	0.0	1.4	-10.5	-0.3	0.5	-11.7	3.8	-0.6	0.0	0.0	0.0	-1.4	0.0	0.0	0.0	-20.3	-1.8	-19.4
Red Cow	0.0	0.0	0.0	0.2	-10.6	0.0	0.4	-11.7	3.8	0.2	0.0	0.0	0.0	-1.3	0.0	0.0	0.0	-18.4	-0.1	-20.4
Blanchardstown	0.5	-0.8	0.7	-14.7	-7.1	-1.5	0.3	-15.7	-0.1	-2.3	0.4	0.4	0.0	3.7	-0.2	-0.2	-0.2	-30.3	-10.7	-22.2
Ashbourne	-2.1	-2.1	-2.1	-2.3	-1.9	-3.8	-2.8	-2.3	-2.6	-4.3	-1.5	-1.5	-16.1	0.0	3.2	2.1	1.4	2.6	1.9	3.5
Donabate	0.0	0.0	0.0	-8.0	-10.7	1.0	1.8	-22.1	-13.5	-2.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	1.1	0.5	-11.3
Balbriggan	0.0	-0.6	-0.6	-8.0	-10.3	0.6	0.6	-20.7	-4.4	-2.6	0.0	0.0	0.0	1.8	0.1	0.0	0.1	3.5	0.0	3.1
Drogheda	0.1	0.1	0.1	-1.5	-0.1	1.4	-0.1	-1.9	-0.4	-1.9	0.1	0.1	0.1	0.0	0.0	-1.2	0.0	-10.6	0.0	0.0
Swords Pavilion	-23.8	-23.9	-16.1	-48.2	-22.9	-27.2	-13.8	-22.4	-29.8	-31.0	-18.6	-18.1	-33.5	-0.9	0.3	0.2	-4.8	0.0	0.1	-16.2
Swords East	-1.2	0.2	2.6	-25.9	-22.9	0.1	5.4	-22.4	-26.5	-9.3	1.4	1.4	-13.5	-0.9	-1.4	0.2	-1.4	0.0	0.0	-16.2
Dublin Airport	-22.2	-17.9	-13.0	-32.2	-9.5	-27.0	-0.5	-8.9	-9.8	-31.9	-0.7	12.8	-29.2	-5.8	-2.4	-1.7	-1.9	-10.6	-10.1	0.0

Table 6.7: Scenario A 2065 PM Peak – Journey Time Comparisons (minutes) between Do Minimum and Do Something

Journey Time 2065 DS - 2065 DM Scenario A PM Peak Period	O'Connell Street	St. Stephen's Green	College Street (Trinity)	Glasnevin	DCU	Rathgar Road	Coolock	Ballymun	Finglas	Sandyford	Tallaght	Red Cow	Blanchardstown	Ashbourne	Donabate	Balbriggan	Drogheda	Swords Pavilion	Swords East	Dublin Airport
O'Connell Street	0.0	0.0	0.0	-3.4	-12.2	-0.1	0.4	-15.5	-4.2	0.0	0.0	0.0	-1.5	0.7	0.0	0.0	-4.0	-29.6	-12.1	-24.5
St. Stephen's Green	0.0	0.0	0.0	-2.4	-10.3	0.0	0.4	-14.3	-0.5	0.0	0.0	0.0	-2.9	0.9	0.0	0.0	-4.0	-30.7	-13.6	-26.3
College Street (Trinity)	0.0	0.0	0.0	-1.1	-9.2	-0.2	0.5	-12.2	2.1	0.0	0.0	0.0	0.0	0.7	0.0	0.0	-4.0	-23.0	-5.5	-16.5
Glasnevin	-3.1	-7.6	-0.3	0.0	0.2	-12.3	-14.1	0.8	0.3	-16.0	0.3	0.3	-13.4	0.7	-7.6	-7.3	-10.1	-43.4	-32.7	-29.3
DCU	-4.3	-9.3	-2.8	0.2	0.0	-13.3	-0.1	0.1	-1.1	-16.2	-0.5	-0.5	-11.8	-10.8	-17.1	-14.0	-16.0	-26.5	-21.9	-17.2
Rathgar Road	0.2	0.1	0.2	-8.4	-13.9	0.0	-1.6	-20.4	-7.6	0.0	0.2	0.2	-7.3	-1.4	-0.1	-0.1	-1.4	-34.9	-9.7	-30.5
Coolock	0.8	1.7	1.8	-9.3	0.0	-1.1	0.0	-0.6	-1.2	-0.8	1.3	1.2	0.6	0.2	0.6	0.6	-3.5	3.7	-0.2	-1.4
Ballymun	-10.0	-15.4	-8.5	1.6	0.1	-18.4	-0.6	0.0	0.7	-22.0	-6.6	-6.6	-14.5	0.2	-19.4	-18.3	-12.7	-22.2	-19.7	-13.2
Finglas	0.3	-1.6	0.6	0.3	-0.3	-7.1	-0.9	-0.3	0.0	-8.6	2.0	1.9	-0.5	0.2	-5.0	-4.7	16.0	-26.7	-24.6	-15.2
Sandyford	0.0	0.1	0.0	-8.9	-16.1	0.0	0.1	-20.3	-5.7	0.0	-0.3	-0.1	-2.8	-4.5	-0.4	-0.4	-3.6	-38.5	-18.7	-36.3
Tallaght	-0.1	-0.1	-0.1	0.2	-6.6	0.0	0.4	-10.3	2.3	0.4	0.0	0.0	-1.7	0.8	-0.1	-0.1	-4.1	-24.4	-7.0	-18.2
Red Cow	-0.1	-0.1	-0.1	0.2	-6.6	-0.2	0.3	-10.3	2.3	-0.1	0.0	0.0	-1.7	0.8	-0.1	-0.1	-4.1	-24.0	-6.6	-0.2
Blanchardstown	0.5	-0.8	0.6	-14.6	-3.9	-1.3	0.4	-11.6	-0.1	-2.9	-0.3	-0.3	0.0	-0.2	0.0	0.0	-4.0	-39.3	-22.0	-28.0
Ashbourne	2.0	2.0	2.0	1.8	2.3	1.1	1.1	2.2	1.6	0.8	2.2	2.2	-10.8	0.0	0.4	1.1	0.1	-0.5	-0.5	-3.1
Donabate	0.0	0.0	0.0	-8.6	-17.4	2.1	0.4	-15.1	-17.1	-3.4	0.0	0.0	0.0	2.7	0.0	-0.1	-0.3	0.5	-0.2	-1.9
Balbriggan	-0.6	-0.1	0.0	-16.7	-13.0	-2.9	0.2	-20.5	-23.8	-10.1	0.6	0.4	-0.8	0.4	0.0	0.0	-0.1	-0.1	-0.1	0.0
Drogheda	0.0	0.0	0.0	-21.1	10.8	-3.0	0.2	-18.2	6.5	-6.3	-0.1	0.0	0.0	-0.5	0.0	0.4	0.0	-10.7	0.1	-1.1
Swords Pavilion	-27.9	-27.0	-21.6	-41.5	-19.5	-29.7	-9.7	-17.1	-24.7	-36.5	-24.0	-23.3	-37.8	2.5	1.0	1.6	-10.1	0.0	1.1	-11.4
Swords East	-1.8	-1.5	-0.2	-25.8	-16.0	-3.7	-0.1	-13.9	-18.7	-10.1	-0.5	-1.0	-13.6	2.5	0.0	-0.9	-0.2	0.0	0.0	-11.6
Dublin Airport	-20.4	-18.3	-12.5	-22.8	-11.2	-31.4	-1.3	-9.0	-11.9	-32.9	7.4	7.6	-28.3	-2.7	-2.7	1.7	0.5	-10.3	-5.8	0.0

Table 6.8: Scenario B 2035 AM Peak - Journey Time Comparisons (minutes) between Do Minimum and Do Something

Journey Time 2035 DS - 2035 DM Scenario B AM Period	O'Connell Street	St. Stephen's Green	College Street (Trinity)	Glasnevin	DCU	Rathgar Road	Coolock	Ballymun	Finglas	Sandyford	Tallaght	Red Cow	Blanchardstown	Ashbourne	Donabate	Balbriggan	Drogheda	Swords Pavilion	Swords East	Dublin Airport
O'Connell Street	0.0	0.0	0.0	-4.2	-10.1	-0.2	0.0	-14.1	-6.6	-0.1	0.0	0.0	-0.4	-3.0	0.0	0.0	0.0	-17.2	1.4	-21.8
St. Stephen's Green	0.0	0.0	0.0	-3.7	-8.9	0.1	0.0	-12.8	-1.1	0.0	0.0	0.0	0.0	-8.1	0.0	0.0	0.0	-19.0	0.1	-19.9
College Street (Trinity)	0.0	0.3	0.0	0.0	-6.5	-0.3	0.0	-10.5	-1.0	-0.1	0.0	0.0	0.0	-2.0	0.0	0.0	0.0	-10.6	2.8	-14.0
Glasnevin	-1.2	-6.1	-0.1	0.0	0.0	-12.5	-0.1	1.2	0.0	-16.2	0.3	1.0	0.0	-2.1	0.0	0.4	0.0	-26.0	-6.9	-26.8
DCU	-2.8	-8.3	-1.4	0.0	0.0	-13.3	0.0	0.0	0.2	-14.5	0.3	0.3	1.2	-0.3	-7.7	-1.6	-0.6	-15.9	-15.3	-9.0
Rathgar Road	0.0	0.0	0.0	-12.8	-18.6	0.0	-2.8	-21.2	-13.2	0.0	0.0	0.0	-5.3	-10.4	-0.1	-0.1	-0.1	-23.2	2.8	-26.6
Coolock	-0.1	-0.3	-0.2	-0.2	-0.1	-0.7	0.0	0.0	0.2	-0.4	0.0	0.1	0.0	8.4	0.0	0.0	-0.6	-6.9	0.2	-0.8
Ballymun	-8.7	-14.2	-7.3	0.1	0.1	-19.2	0.0	0.0	0.0	-20.4	-5.4	-5.5	-3.0	-0.3	-15.9	-16.9	-0.9	-17.6	-17.1	-10.7
Finglas	-0.8	-5.0	-0.3	0.1	-0.3	-14.8	-0.3	-2.3	0.0	-17.1	3.9	3.9	0.0	-2.4	2.3	-0.2	-0.9	-21.5	-18.7	-17.5
Sandyford	0.0	0.0	0.0	-13.8	-17.9	0.0	-3.2	-21.8	-14.5	0.0	-0.6	0.0	-4.0	-16.6	-1.8	-1.8	-2.4	-27.5	-5.5	-30.4
Tallaght	0.0	0.0	0.0	0.6	-7.5	0.0	0.0	-11.5	5.8	-0.1	0.0	0.0	-0.1	-1.7	0.0	0.0	0.0	-16.4	0.8	-10.2
Red Cow	0.0	0.0	0.0	1.5	-6.7	-0.2	0.0	-10.5	6.4	0.9	0.0	0.0	0.0	-1.6	0.0	0.0	0.0	-14.5	2.3	-1.2
Blanchardstown	-0.4	0.0	0.0	0.0	0.2	-1.9	0.0	-2.8	0.0	-2.3	-0.1	0.0	0.0	-2.2	0.0	0.0	0.0	-25.7	-5.7	-22.8
Ashbourne	-0.2	-0.5	-0.5	-0.2	0.1	-1.0	-0.6	-0.2	-0.2	-0.7	0.1	0.1	-0.2	0.0	1.3	0.1	0.1	0.7	0.3	3.3
Donabate	0.0	0.0	0.0	-0.1	-1.3	0.6	-0.1	-19.0	-0.1	-0.6	0.0	0.0	0.0	0.8	0.0	0.0	0.0	1.1	0.0	-0.1
Balbriggan	0.0	0.0	0.0	0.1	-3.9	0.6	0.0	-14.1	4.2	-0.6	0.0	0.0	0.0	0.8	0.0	0.0	0.0	3.0	0.0	3.9
Drogheda	0.0	0.0	0.0	-0.1	3.2	0.1	0.0	10.1	-0.2	-0.3	0.0	0.0	0.0	-0.5	0.0	-0.1	0.0	0.6	0.0	3.3
Swords Pavilion	-21.1	-21.6	-13.5	-28.1	-16.3	-25.3	-9.3	-16.1	-20.7	-26.5	-15.2	-14.7	-26.4	-0.3	0.7	-0.7	-9.6	0.0	0.1	-10.3
Swords East	-0.7	1.3	2.6	-10.7	-17.2	0.5	5.7	-17.0	-20.5	-6.7	1.6	1.6	-8.5	-0.3	-0.5	-0.6	-0.5	0.0	0.0	-11.3
Dublin Airport	-19.8	-17.6	-12.7	-29.4	-8.5	-27.2	-1.1	-7.9	-4.7	-27.5	15.9	12.3	-23.9	-5.3	0.3	-0.7	-0.5	-10.5	-8.9	0.0

Table 6.9: Scenario B 2035 PM Peak - Journey Time Comparisons (minutes) between Do Minimum and Do Something

Journey Time 2035 DS - 2035 DM Scenario B PM Period	O'Connell Street	St. Stephen's Green	College Street (Trinity)	Glasnevin	DCU	Rathgar Road	Coolock	Ballymun	Finglas	Sandyford	Tallaght	Red Cow	Blanchardstown	Ashbourne	Donabate	Balbriggan	Drogheda	Swords Pavilion	Swords East	Dublin Airport
O'Connell Street	0.0	0.0	0.0	-5.9	-11.6	0.0	0.1	-15.5	-6.3	0.0	0.0	0.0	-0.5	0.6	0.0	0.0	5.6	-20.8	-3.3	-17.8
St. Stephen's Green	0.0	0.0	0.0	-4.2	-10.2	0.0	0.1	-14.2	-3.7	0.0	0.0	0.0	0.0	0.6	0.0	0.0	5.6	-22.6	-5.2	-18.3
College Street (Trinity)	0.0	0.0	0.0	0.0	-7.8	-0.1	0.1	-11.8	0.2	0.0	0.0	0.0	0.0	0.6	0.0	0.0	5.6	-14.1	2.4	-9.7
Glasnevin	-1.1	-4.9	0.1	0.0	-0.3	-12.1	0.1	0.8	0.1	-14.0	0.4	0.7	0.0	0.5	0.0	0.4	5.6	-37.7	-12.0	-25.6
DCU	-2.7	-7.7	-1.0	-0.2	0.0	-13.2	0.1	0.0	0.0	-14.0	0.3	0.3	1.2	0.5	-3.5	-2.6	0.5	-16.6	-14.3	-5.6
Rathgar Road	0.2	0.0	0.2	-13.3	-19.6	0.0	-3.1	-22.1	-10.5	0.0	0.0	0.0	-4.6	-2.4	-0.1	-0.1	0.0	-29.5	-1.0	-19.2
Coolock	0.0	0.0	0.0	-0.2	0.0	-0.8	0.0	0.0	0.0	-0.4	0.0	0.0	0.0	0.6	0.0	0.0	0.0	4.6	-0.1	0.6
Ballymun	-8.7	-13.7	-7.2	-0.2	0.0	-19.1	0.0	0.0	0.0	-19.9	-5.2	-5.2	-2.8	0.7	-19.5	-14.9	-10.3	-18.3	-18.8	-9.7
Finglas	0.0	-1.6	0.0	0.0	-0.2	-5.8	-0.1	0.0	0.0	-6.4	3.1	3.2	0.0	0.5	4.2	0.1	5.5	-22.0	-19.0	-10.5
Sandyford	0.0	0.0	0.0	-15.9	-19.7	0.0	-3.4	-23.6	-15.8	0.0	0.3	0.0	-2.8	-5.1	-1.4	-1.4	-1.5	-30.6	-10.9	-29.2
Tallaght	-0.1	-0.1	-0.1	1.2	-7.2	0.5	0.0	-11.1	5.4	-0.1	0.0	0.0	0.0	0.5	-0.1	-0.1	5.5	-17.6	-0.6	3.1
Red Cow	-0.1	-0.1	-0.1	1.6	-7.1	0.0	0.0	-11.1	3.8	0.0	0.0	0.0	0.1	0.5	-0.1	0.0	5.5	-17.2	-0.4	10.4
Blanchardstown	-0.4	0.0	0.0	0.0	-0.3	-2.0	0.1	-4.2	0.4	-2.7	1.4	0.1	0.0	0.0	0.0	0.0	5.6	-28.5	-10.6	-21.5
Ashbourne	0.1	0.1	0.1	0.1	-0.1	-0.5	0.3	0.5	0.0	-0.2	0.0	0.0	0.0	0.0	22.0	1.1	0.2	0.0	0.0	-0.9
Donabate	0.0	0.0	0.0	-0.2	-4.4	0.8	0.0	-12.0	-0.2	-0.6	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.4	-0.1	-0.4
Balbriggan	0.0	0.0	0.0	1.3	-13.0	2.4	0.0	-17.3	-1.9	-0.3	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.2
Drogheda	0.0	0.0	0.0	-0.2	-0.7	0.4	0.0	-15.3	-1.1	-1.7	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	-8.5	-0.1	-0.1
Swords Pavilion	-26.1	-25.1	-19.8	-34.4	-16.2	-31.2	-10.3	-16.0	-19.8	-31.4	-23.0	-22.3	-33.6	1.2	1.1	1.4	-2.7	0.0	0.0	-10.4
Swords East	-1.0	0.2	3.8	-11.0	-17.2	-0.1	1.3	-16.9	-20.7	-5.7	2.3	2.4	-8.7	1.2	0.1	0.1	0.1	0.0	0.0	-11.4
Dublin Airport	-23.6	-22.6	-16.8	-24.5	-8.0	-32.5	-0.7	-7.7	-2.8	-33.3	15.7	12.1	-29.0	0.5	0.2	-0.4	-0.6	-10.5	-6.1	0.0

Table 6.10: Scenario B 2050 AM Peak - Journey Time Comparisons (minutes) between Do Minimum and Do Something

Journey Time 2050 DS - 2050 DM Scenario B AM Period	O'Connell Street	St. Stephen's Green	College Street (Trinity)	Glasnevin	DCU	Rathgar Road	Coolock	Ballymun	Finglas	Sandyford	Tallaght	Red Cow	Blanchardstown	Ashbourne	Donabate	Balbriggan	Drogheda	Swords Pavilion	Swords East	Dublin Airport
O'Connell Street	0.0	0.0	0.0	-4.7	-11.1	0.0	0.0	-14.1	0.0	0.0	0.0	0.0	-0.3	-0.5	-2.6	0.0	-0.1	-18.2	0.9	-21.7
St. Stephen's Green	0.0	0.0	0.0	-3.5	-9.5	0.0	0.0	-13.5	0.0	0.0	0.1	0.0	0.0	-1.3	0.0	0.0	0.0	-19.7	-0.6	-22.7
College Street (Trinity)	0.0	0.0	0.0	0.1	-6.9	0.0	0.0	-10.8	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	1.4	-11.5	2.7	-17.1
Glasnevin	-1.0	-4.2	0.4	0.0	-0.1	-11.1	-0.1	1.1	0.1	-13.3	0.5	1.3	0.0	0.1	-3.9	-3.5	-0.1	-32.1	-10.2	-23.3
DCU	-2.7	-8.2	-0.8	0.0	0.0	-9.7	0.0	0.0	0.0	-11.4	0.4	0.4	1.1	0.3	-0.2	-0.1	-0.1	-15.4	-14.9	-8.6
Rathgar Road	0.0	-0.1	-0.1	-11.0	-13.8	0.0	-1.5	-19.2	0.0	0.0	0.0	0.4	-1.9	-2.3	-0.1	-0.1	-6.5	-24.9	2.3	-27.4
Coolock	0.0	0.0	-0.2	-0.3	-0.1	0.0	0.0	0.3	0.0	-0.1	0.0	0.1	-0.1	0.2	0.0	0.0	-0.1	-4.8	0.2	-0.8
Ballymun	-8.6	-14.1	-7.1	0.0	0.0	-16.2	0.0	0.0	0.0	-18.0	-5.1	-5.1	-2.9	0.0	-13.3	-8.9	-0.3	-17.4	-16.7	-10.5
Finglas	0.0	0.0	0.0	0.1	0.1	0.0	-0.4	0.0	0.0	0.0	0.2	0.2	0.0	0.0	-0.2	-0.5	0.0	-20.9	-1.4	-9.2
Sandyford	-0.1	0.0	0.0	-10.8	-15.5	0.0	-1.2	-19.4	0.0	0.0	8.1	0.0	-1.1	-0.7	0.0	0.0	2.8	-26.8	-6.1	-32.2
Tallaght	0.0	0.0	0.0	1.2	-7.5	0.0	0.0	-10.4	0.0	0.4	0.0	0.0	0.0	0.1	0.0	0.0	0.0	-13.0	2.1	-16.6
Red Cow	0.0	0.0	0.0	1.4	-7.8	0.0	-0.1	-10.6	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	-14.2	2.4	-4.7
Blanchardstown	-0.1	0.1	0.1	0.1	-0.5	-0.7	0.1	-3.1	0.1	-0.8	0.0	0.1	0.0	0.2	-0.1	0.1	0.1	-25.6	-7.2	-18.3
Ashbourne	0.0	0.0	0.0	-0.1	0.4	-0.1	-0.2	-0.1	-0.1	-0.1	0.4	0.4	-0.4	0.0	2.2	0.8	-0.3	1.7	0.4	8.1
Donabate	0.0	0.0	0.0	-2.9	-0.2	0.0	0.0	-14.8	0.2	0.0	0.1	0.2	0.0	0.3	0.0	0.0	0.0	0.9	-2.5	-1.7
Balbriggan	0.0	0.0	0.0	-2.0	-0.9	0.0	0.0	-17.7	-0.3	0.0	0.1	0.2	0.0	1.9	0.0	0.0	0.1	2.5	-3.3	2.8
Drogheda	-0.1	0.0	0.0	-10.6	-2.3	0.0	0.0	-2.5	-2.2	0.0	0.0	0.1	0.0	0.5	0.0	0.4	0.0	1.8	-2.6	-2.5
Swords Pavilion	-28.5	-28.4	-20.8	-35.0	-16.9	-29.5	-10.2	-16.7	-12.4	-31.1	-21.3	-22.0	-35.1	-0.6	0.7	6.9	-5.1	0.0	0.0	-10.7
Swords East	-10.2	-8.4	-3.9	-22.9	-17.9	-9.8	5.7	-17.6	-23.4	-14.0	-4.2	-5.7	-19.7	-0.6	-1.4	6.0	-1.4	0.0	0.0	-11.6
Dublin Airport	-24.3	-19.8	-15.0	-31.9	-8.2	-26.7	-0.9	-7.8	1.1	-28.7	3.2	14.8	-27.1	-6.4	-1.6	6.9	0.1	-10.8	-8.9	0.0

Table 6.11: Scenario B 2050 PM Peak - Journey Time Comparisons (minutes) between Do Minimum and Do Something

Journey Time 2050 DS - 2050 DM Scenario B PM Period	O'Connell Street	St. Stephen's Green	College Street (Trinity)	Glasnevin	DCU	Rathgar Road	Coolock	Ballymun	Finglas	Sandyford	Tallaght	Red Cow	Blanchardstown	Ashbourne	Donabate	Balbriggan	Drogheda	Swords Pavilion	Swords East	Dublin Airport
O'Connell Street	0.0	0.0	0.0	-5.3	-11.0	0.0	0.1	-15.0	0.0	0.0	0.0	0.0	-0.3	0.3	0.0	-0.5	0.0	-23.7	-6.4	-20.8
St. Stephen's Green	0.0	0.0	0.0	-3.8	-10.3	0.0	0.0	-14.3	0.0	0.0	0.0	0.0	0.0	-0.7	0.0	0.0	0.0	-25.5	-8.3	-22.8
College Street (Trinity)	0.0	0.0	0.0	0.0	-7.7	0.0	0.1	-11.6	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.1	-17.0	0.3	-13.7
Glasnevin	-1.6	-4.2	0.2	0.0	0.0	-10.2	0.0	1.1	0.0	-12.4	0.4	0.6	0.0	0.3	-0.1	-2.2	-0.1	-37.4	-17.4	-24.8
DCU	-2.6	-7.8	-0.8	-0.1	0.0	-9.9	0.0	0.0	-0.1	-11.2	0.4	0.3	1.1	0.1	0.0	-2.4	13.8	-16.4	-14.4	-7.9
Rathgar Road	0.0	0.0	0.0	-11.8	-17.2	0.0	-2.0	-20.0	0.0	0.0	-0.1	0.0	-1.7	-2.7	0.0	0.0	0.0	-32.4	-4.3	-26.9
Coolock	0.0	0.0	0.0	0.0	0.0	-0.3	0.0	0.0	-0.1	-0.2	0.0	0.0	0.0	0.2	0.0	-0.3	-0.3	3.3	-0.1	-0.5
Ballymun	-8.5	-13.7	-7.0	-0.1	0.0	-15.9	-0.7	0.0	0.1	-17.7	-5.1	-5.1	-2.7	0.3	-12.5	-18.0	-6.5	-18.2	-18.6	-9.7
Finglas	0.0	0.0	0.0	0.0	-0.4	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.2	-0.3	-0.8	1.1	-26.3	-10.7	-10.8
Sandyford	0.0	0.0	0.0	-12.5	-16.7	0.0	-1.3	-20.7	0.0	0.0	-0.3	0.0	-1.0	-0.7	0.0	0.0	0.0	-32.0	-14.0	-28.1
Tallaght	0.0	0.0	0.0	0.7	-8.5	0.0	0.1	-10.9	0.0	2.6	0.0	0.0	0.0	0.3	0.0	0.0	0.2	-17.9	-1.0	-15.4
Red Cow	-0.1	-0.1	-0.1	1.4	-7.3	0.1	0.0	-11.3	-0.1	0.0	0.0	0.0	-0.1	0.2	0.0	0.0	0.2	-19.2	-2.2	3.8
Blanchardstown	-0.2	0.0	0.0	0.0	-1.0	-0.6	0.1	-4.1	0.0	-0.8	0.0	0.0	0.0	-0.2	0.0	0.0	0.0	-31.1	-14.5	-20.1
Ashbourne	0.6	0.7	0.6	0.6	0.0	0.6	1.3	1.2	0.6	0.6	0.7	0.6	0.6	0.0	2.4	0.7	0.2	0.6	0.6	-4.9
Donabate	-3.4	0.0	0.0	-6.4	-1.8	0.0	0.0	-12.6	-3.4	0.0	0.0	0.0	-1.3	2.0	0.0	0.0	0.0	0.5	-0.4	-0.4
Balbriggan	-14.8	0.0	-0.2	-16.2	-10.2	-1.0	0.0	-18.1	-13.2	-1.2	0.0	0.0	-5.0	2.4	0.0	0.0	0.0	0.5	0.3	-1.2
Drogheda	4.9	0.0	6.4	4.6	13.7	-8.9	0.0	-18.2	11.0	-1.0	0.1	15.1	7.6	-0.2	0.0	0.2	0.0	-9.5	-0.4	-1.5
Swords Pavilion	-30.0	-29.1	-23.6	-34.2	-15.7	-32.2	-9.7	-15.8	-12.4	-34.1	-26.1	-27.2	-27.2	1.5	2.0	0.4	-4.2	0.0	0.0	-10.6
Swords East	-0.9	0.1	3.1	-13.8	-16.6	-0.8	1.4	-16.8	-15.4	-4.4	1.8	1.5	-10.7	1.5	-0.1	-0.7	-0.1	0.0	0.0	-11.5
Dublin Airport	-18.7	-26.2	-19.9	-25.9	-7.4	-26.0	-0.3	-7.5	1.3	-32.6	14.0	16.3	-19.0	11.4	-0.2	-1.4	3.2	-10.0	-4.8	0.0

Table 6.12: Scenario B 2065 AM Peak - Journey Time Comparisons (minutes) between Do Minimum and Do Something

Journey Time 2065 DS - 2065 DM Scenario B AM Period	O'Connell Street	St. Stephen's Green	College Street (Trinity)	Glasnevin	DCU	Rathgar Road	Coolock	Ballymun	Finglas	Sandyford	Tallaght	Red Cow	Blanchardstown	Ashbourne	Donabate	Balbriggan	Drogheda	Swords Pavilion	Swords East	Dublin Airport
O'Connell Street	0.0	0.0	0.0	-4.7	-10.5	0.0	0.0	-14.5	0.0	0.0	0.0	0.0	-0.3	-1.0	-2.5	0.0	0.1	-19.3	-0.3	-23.5
St. Stephen's Green	0.0	0.0	0.0	-3.5	-9.9	0.0	0.0	-13.9	0.0	0.0	0.1	0.1	0.0	-1.8	0.0	0.0	0.0	-21.2	-2.2	-26.9
College Street (Trinity)	0.0	0.0	0.0	0.1	-6.8	0.1	0.0	-11.3	0.0	0.0	0.0	0.0	0.0	-0.5	0.0	0.0	0.0	-12.6	3.2	-23.0
Glasnevin	-0.9	-4.2	0.4	0.0	-0.1	-11.0	-0.1	1.0	0.0	-13.1	0.5	1.6	0.0	-0.5	-3.9	-5.6	0.1	-31.3	-11.5	-23.3
DCU	-2.5	-8.1	-0.7	0.0	0.0	-9.4	0.0	0.0	-0.3	-11.1	0.4	0.4	1.1	0.1	-0.2	-2.5	0.1	-15.6	-14.9	-7.8
Rathgar Road	-0.1	-0.1	-0.1	-10.8	-12.7	0.0	-1.6	-20.1	0.0	0.0	0.0	-0.3	-2.0	-2.9	-0.1	-0.2	-7.9	-26.2	1.4	-26.3
Coolock	0.0	0.0	-0.1	-0.2	-0.1	-0.2	0.0	0.0	0.4	-0.2	0.0	0.0	0.0	9.4	0.0	0.0	0.2	-5.4	0.7	-0.2
Ballymun	-8.4	-14.0	-6.9	0.0	0.0	-16.0	0.1	0.0	0.0	-17.7	-5.0	-5.0	-2.8	0.0	-16.7	-19.1	0.0	-17.6	-16.7	-9.7
Finglas	0.0	0.0	0.0	-0.2	-0.2	0.0	0.1	-0.5	0.0	0.0	0.2	0.2	0.0	-0.6	0.0	-1.6	-0.2	-22.0	-2.6	-11.1
Sandyford	-0.1	0.0	0.0	-10.5	-15.6	0.0	-1.1	-19.8	0.0	0.0	0.0	0.0	-1.1	-1.3	0.0	0.0	0.1	-28.2	-7.8	-31.2
Tallaght	0.0	0.0	0.0	1.1	-7.3	0.2	0.0	-10.3	0.0	0.1	0.0	0.0	0.0	-0.6	0.0	0.0	0.0	-14.0	2.8	-23.3
Red Cow	0.0	0.0	0.0	0.0	-6.5	0.0	0.0	-10.6	0.0	0.0	0.0	0.0	0.0	-0.7	-0.2	0.0	0.0	-15.2	2.5	-11.3
Blanchardstown	-0.5	-0.3	-0.3	-0.2	-0.9	-1.0	-0.2	-4.5	-0.2	-1.1	-0.4	2.2	0.0	-0.7	-0.5	-0.3	-0.2	-25.8	-8.8	-16.8
Ashbourne	0.5	0.6	0.5	0.5	0.7	0.6	0.5	0.5	0.5	0.5	0.9	1.0	0.5	0.0	2.5	2.6	2.7	1.9	1.9	8.0
Donabate	0.0	0.0	0.0	-0.7	2.3	0.0	0.0	-15.8	0.4	0.0	0.0	0.1	0.0	0.2	0.0	0.0	0.0	1.4	7.7	-0.8
Balbriggan	0.1	0.0	0.0	-0.4	1.0	-0.1	0.0	-19.1	0.3	0.0	0.0	0.1	0.0	-0.1	0.0	0.0	-0.1	1.2	8.3	1.3
Drogheda	1.0	0.0	0.0	7.0	-3.8	0.0	0.0	-4.0	-3.2	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	-1.1	7.7	-2.4
Swords Pavilion	-29.5	-29.4	-21.7	-42.3	-17.0	-30.6	-11.1	-16.8	-13.2	-32.2	-22.1	-22.9	-35.2	-1.2	0.7	-1.6	-10.6	0.0	0.1	-10.8
Swords East	-10.7	-8.7	-4.4	-23.2	-17.9	-10.3	2.8	-17.7	-23.1	-14.4	-4.5	-6.5	-20.0	-1.2	0.3	-1.1	0.3	0.0	0.0	-11.7
Dublin Airport	-23.8	-21.5	-16.6	-29.8	-7.8	-30.0	-0.8	-7.6	0.9	-31.2	-0.9	12.4	-28.1	-6.5	-1.5	-1.7	0.0	-11.1	-10.3	0.0

Table 6.13: Scenario B 2065 PM Peak - Journey Time Comparisons (minutes) between Do Minimum and Do Something

Journey Time 2065 DS - 2065 DM Scenario B PM Period	O'Connell Street	St. Stephen's Green	College Street (Trinity)	Glasnevin	DCU	Rathgar Road	Coolock	Ballymun	Finglas	Sandyford	Tallaght	Red Cow	Blanchardstown	Ashbourne	Donabate	Balbriggan	Drogheda	Swords Pavilion	Swords East	Dublin Airport
O'Connell Street	0.0	0.0	0.0	-5.3	-10.5	0.0	0.1	-14.5	0.0	0.0	0.0	0.0	-0.5	0.1	0.0	0.0	0.0	-24.3	-6.8	-25.8
St. Stephen's Green	0.0	0.0	0.0	-3.8	-9.8	0.0	0.0	-13.8	0.0	0.0	0.0	0.0	-0.2	-0.8	0.0	0.0	0.0	-26.0	-9.0	-27.0
College Street (Trinity)	0.0	0.0	0.0	0.0	-7.2	0.0	0.0	-11.2	0.0	0.0	0.0	0.0	-0.2	0.1	0.0	0.0	0.3	-17.7	-0.2	-16.5
Glasnevin	-0.9	-4.1	0.2	0.0	-0.1	-9.9	-0.1	1.1	0.1	-12.1	0.4	0.8	-0.1	0.3	0.6	-3.6	-0.1	-36.4	-17.9	-26.2
DCU	-2.4	-8.2	-0.6	-0.1	0.0	-9.5	0.2	0.1	0.0	-10.9	0.5	0.4	0.5	0.0	1.9	-2.1	-0.2	-16.6	-14.3	-7.9
Rathgar Road	0.1	0.0	0.1	-11.4	-15.8	0.0	-2.1	-19.5	0.0	0.0	0.0	0.0	-2.1	-3.1	0.0	0.0	0.0	-33.3	-5.1	-28.9
Coolock	0.0	0.0	0.0	0.0	0.0	-0.3	0.0	-0.4	0.0	-0.2	0.0	0.0	-0.1	0.1	0.0	0.3	0.3	3.8	-0.4	0.0
Ballymun	-8.3	-13.5	-6.8	-0.2	-0.1	-15.1	0.0	0.0	0.3	-17.4	-4.9	-4.9	-2.7	0.3	-17.2	-20.3	-8.6	-18.4	-18.6	-9.7
Finglas	0.0	0.0	0.0	0.0	-0.1	0.0	0.1	-0.1	0.0	0.0	0.0	0.0	-0.1	0.1	0.2	-0.7	2.3	-26.4	-10.6	-5.7
Sandyford	0.0	0.0	0.0	-12.6	-16.2	0.0	-1.3	-20.1	0.0	0.0	1.0	0.0	-1.2	-1.0	0.0	0.0	0.0	-32.8	-14.6	-34.2
Tallaght	0.0	0.1	0.0	1.2	-6.0	0.2	0.0	-10.0	0.0	1.6	0.0	0.0	0.0	0.2	0.0	0.0	0.5	-18.6	-1.2	-20.8
Red Cow	-0.1	0.0	-0.1	-0.1	-5.7	0.1	-0.1	-10.5	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	-19.9	-2.8	-10.4
Blanchardstown	-0.2	0.0	0.0	0.0	-0.7	-0.6	0.1	-3.1	0.0	-0.9	0.0	-0.1	0.0	-1.3	0.0	0.0	0.0	-30.6	-15.0	-20.1
Ashbourne	0.1	0.2	0.1	0.1	0.6	0.1	0.2	0.6	0.1	0.1	0.2	0.2	0.0	0.0	-0.4	0.2	0.0	-0.3	-0.3	3.6
Donabate	-2.9	0.0	0.0	-6.0	-2.0	0.0	0.0	-12.2	-4.0	0.0	0.0	0.0	-1.3	2.7	0.0	0.0	0.0	0.5	0.1	-0.5
Balbriggan	-14.8	0.0	-0.1	-16.2	-10.6	-1.0	0.0	-18.8	-14.3	-1.1	0.0	0.0	-5.5	-0.7	0.0	0.0	0.0	-0.2	-0.2	-4.0
Drogheda	5.5	0.0	7.0	5.2	13.4	-8.4	0.0	-20.0	9.0	-0.7	0.1	-0.6	8.1	0.1	0.0	-0.1	0.0	-10.0	0.1	-3.4
Swords Pavilion	-30.1	-29.6	-24.1	-31.3	-15.9	-32.2	-10.3	-16.0	-12.7	-34.5	-26.6	-27.7	-24.4	2.0	-0.1	-0.6	-0.9	0.0	-0.1	-10.9
Swords East	-2.3	-1.2	1.9	-15.1	-16.8	-2.4	2.3	-17.0	-17.4	-5.6	0.6	0.3	-12.2	2.0	0.5	0.5	0.5	0.0	0.0	-11.9
Dublin Airport	-19.9	-24.3	-17.5	-23.1	-7.4	-23.1	-0.3	-7.5	1.7	-29.9	7.0	13.2	-16.2	9.5	-2.2	-0.6	1.1	-10.0	-4.8	0.0

6.1.2 Public Transport Accessibility

The proposed Project will improve public transport accessibility in the Dublin area, allowing people to travel further by public transport for a set journey time or travel faster to existing destination. The following plots demonstrate public transport benefits that are achieved when the proposed Project is in place. In this sense, public transport includes bus, rail and the proposed Project, and therefore accounts for interchanges with the proposed Project.

Figure 6.2 presents the difference in volume of the number of origin-destination pairings per zone by public transport across the extent of the ERM, between the Scenario A 2050 Do Minimum and Do Something scenarios. The figure illustrates that the zones around Estuary Station and the Park and Ride Facility sees the largest increase, with an increase of over 160 origin-destination pairings, i.e, there are over 160 additional zones that are accessible from the Estuary zones, once the proposed Project is in place. Similar large increases can be seen from the zones along the Dublin/Meath border to the west of the Estuary zone. Many of the zones in Dublin City Centre no increase as there is an extensive existing public transport network facilitating accessibility to and from the surrounding zones. The Greater Dublin Area (GDA) sees an increase of approximately 0-40 origin-destination pairings per zone.

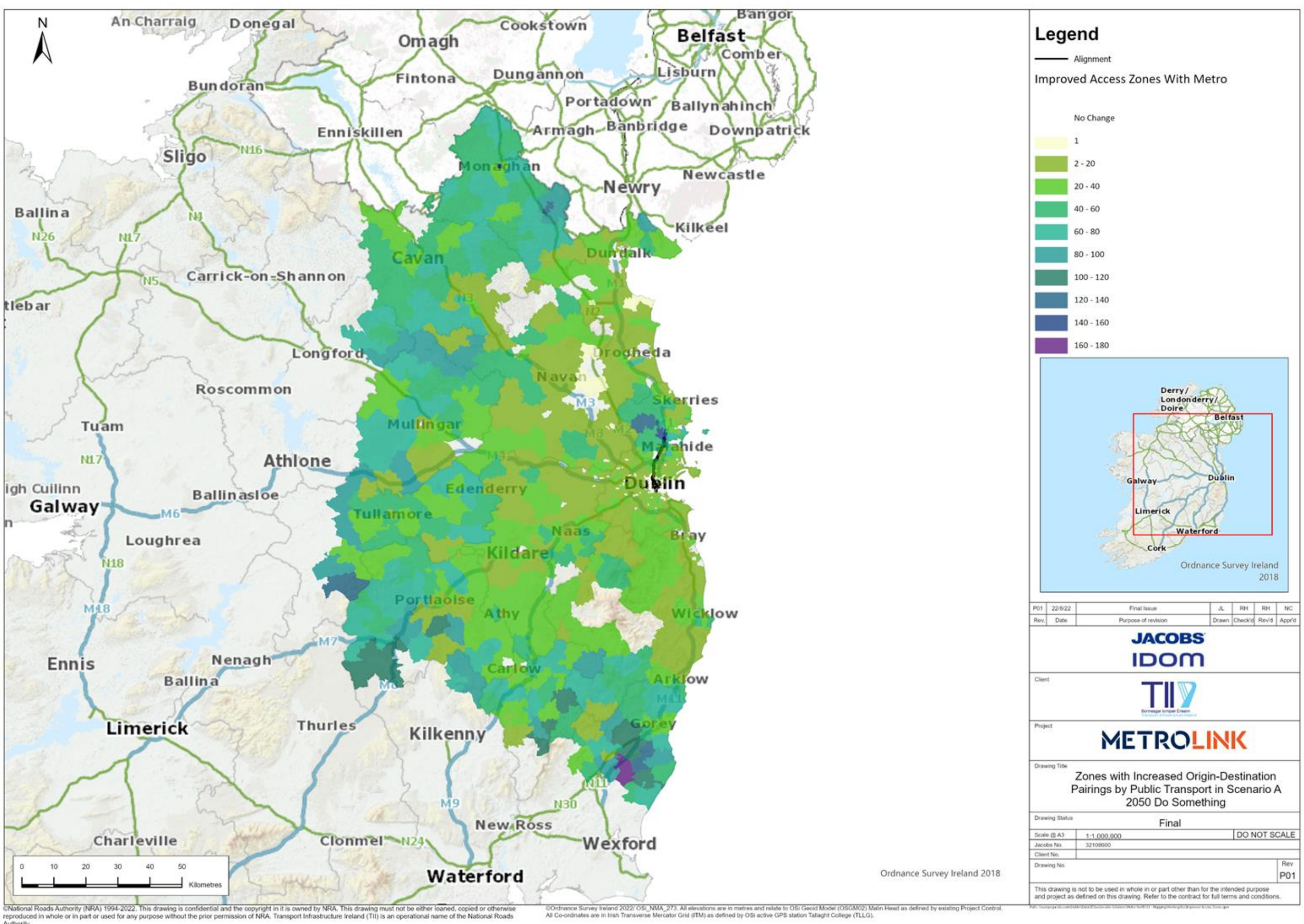

Figure 6.2: Difference in Volume of Origin-Destination Pairings per Zone in Scenario A 2050 Do Minimum and Do Something

Figure 6.3 and Figure 6.4 illustrate the differences in public journey time when the proposed Project is in place, when travelling to and from Dublin Airport in the morning peak. They show newly accessible areas (within 45minutes P/T) and show the improvements in journey times for areas that are currently within a 45-minute public transport journey of Dublin Airport.

It can be seen that when travelling from Dublin Airport by public transport in the AM peak, a journey time saving of 10-20minutes occurs along the M2. It also shows that there are areas around Blanchardstown that are accessible within 45minutes by public transport when the proposed Project is in place. In the immediate zones around Blanchardstown, there is a population of approximately 16,000 people in the base year, who will benefit from the proposed Project in this way. The same zones have approximately 13,000 jobs in the base year, who will now be able to access Dublin Airport within 45minutes by public transport. Journey time savings of 10-20minutes can be seen along the southern section of the alignment, at Charlemont station where interchange with Luas Green Line is available.

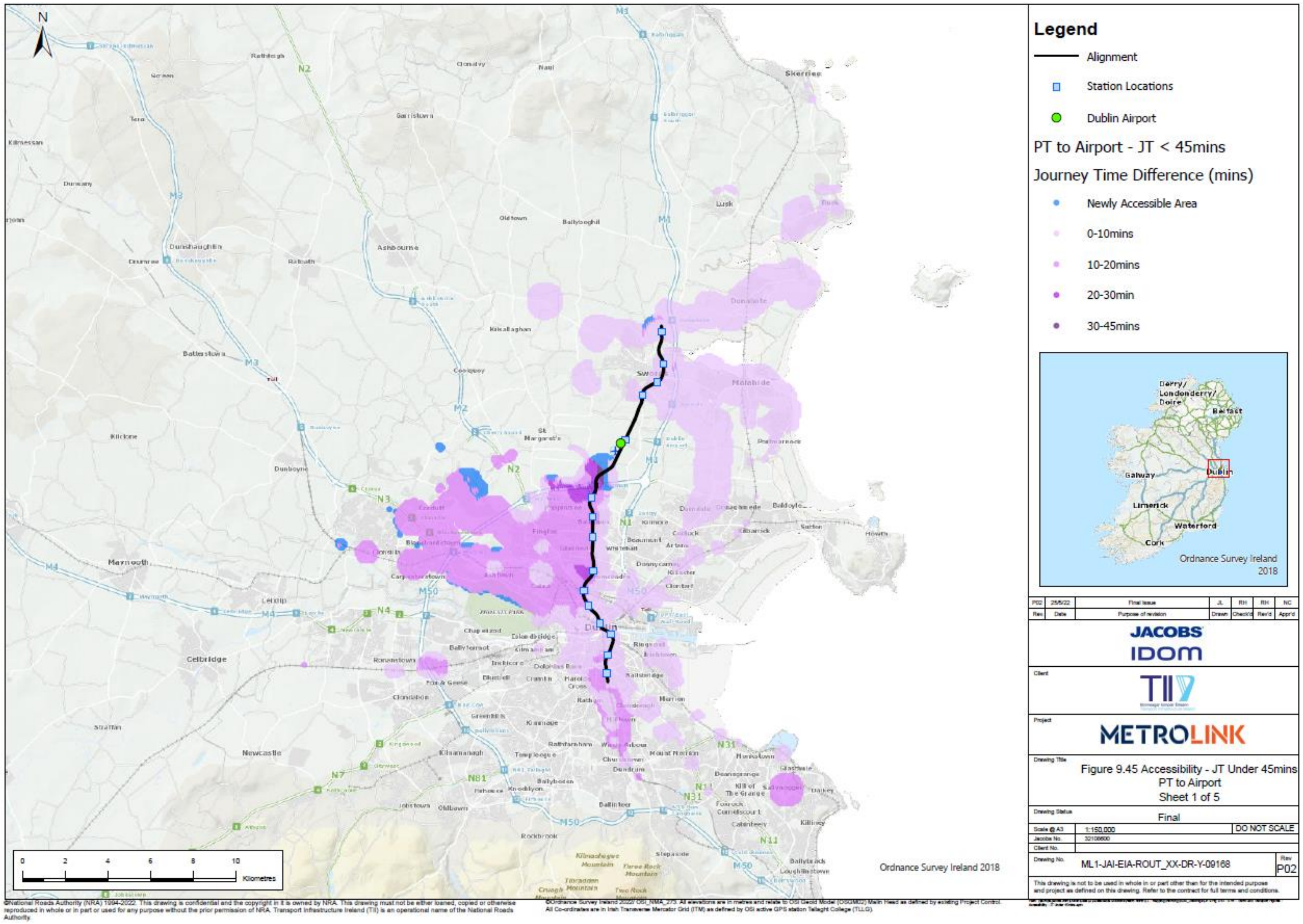

Figure 6.3: Differences in public transport journey time catchments in morning peak, trips to Dublin Airport

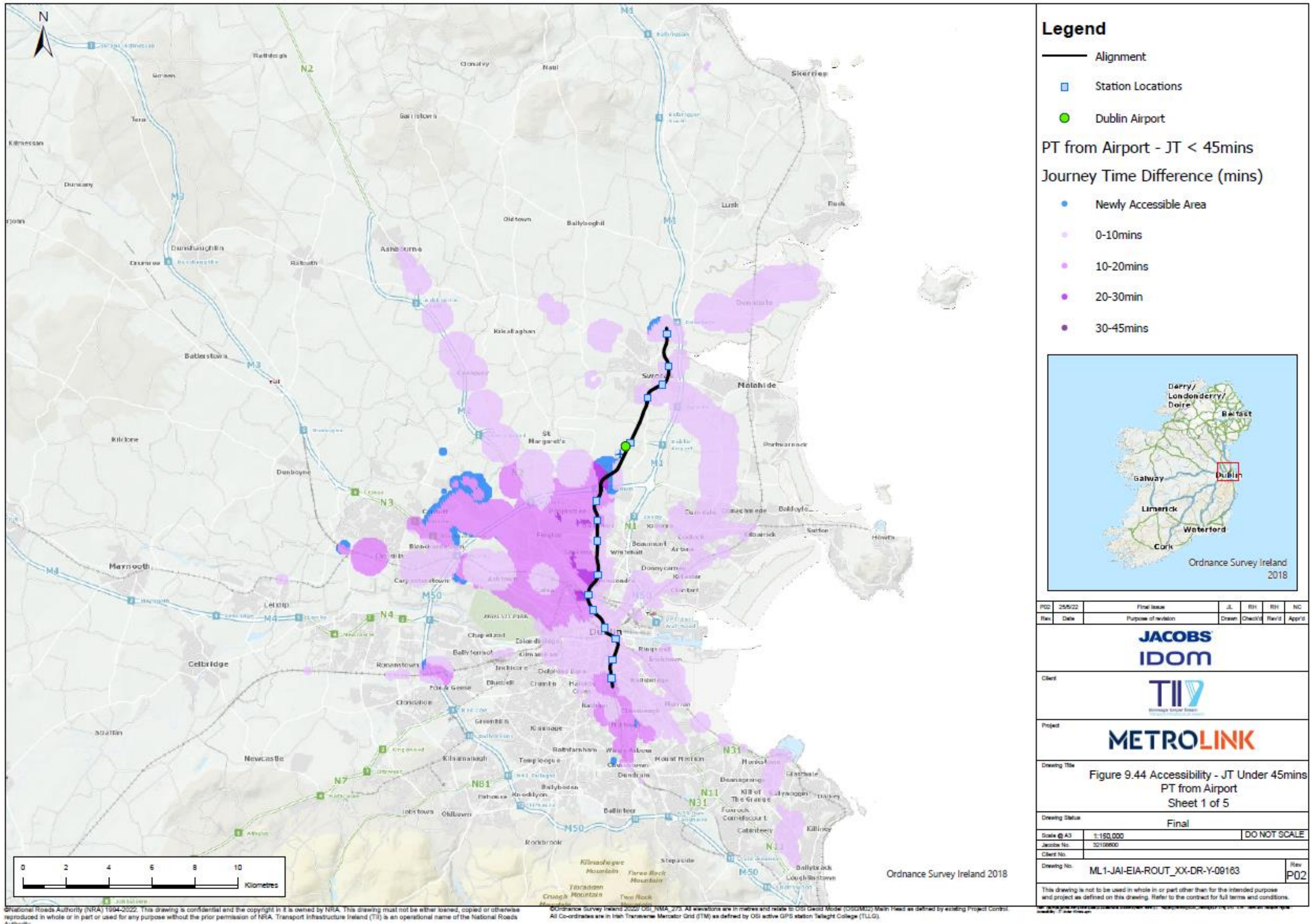

Figure 6.4: Differences in public transport journey time catchments in morning peak, trips from Dublin Airport

Figure 6.5 and Figure 6.6 illustrate the areas where additional population have accessibility to and from Dublin Airport within a 45-minute journey time, when proposed Project is in place. These areas may facilitate accessibility for some of the population currently, however with proposed Project in place, more of the population are able to access Dublin Airport within 45 minutes. With the proposed Project in place, approximately 129,000 additional people are able to access Dublin Airport within 45 minutes.

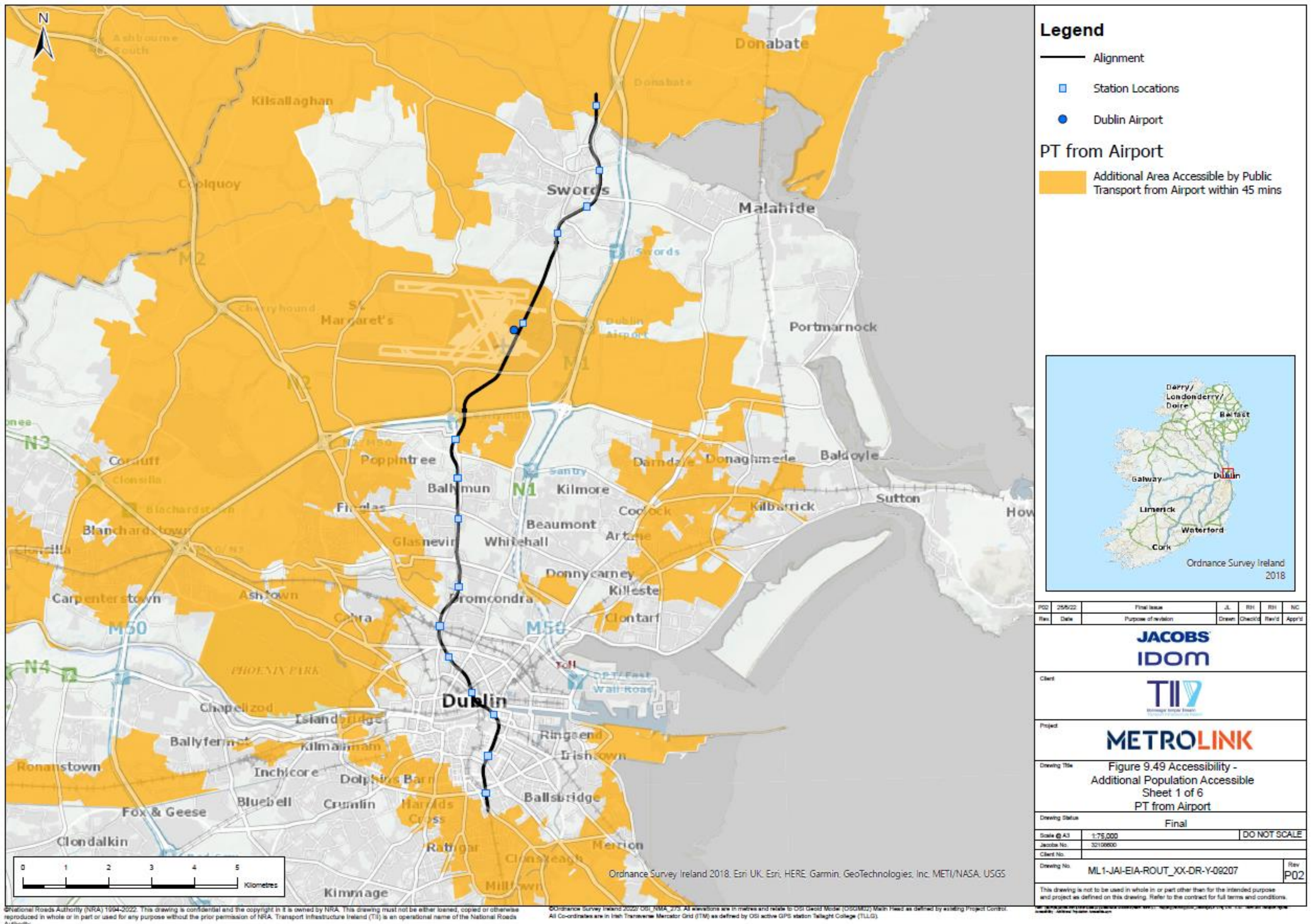

Figure 6.5: Accessibility from Dublin Airport in the morning peak by Public Transport

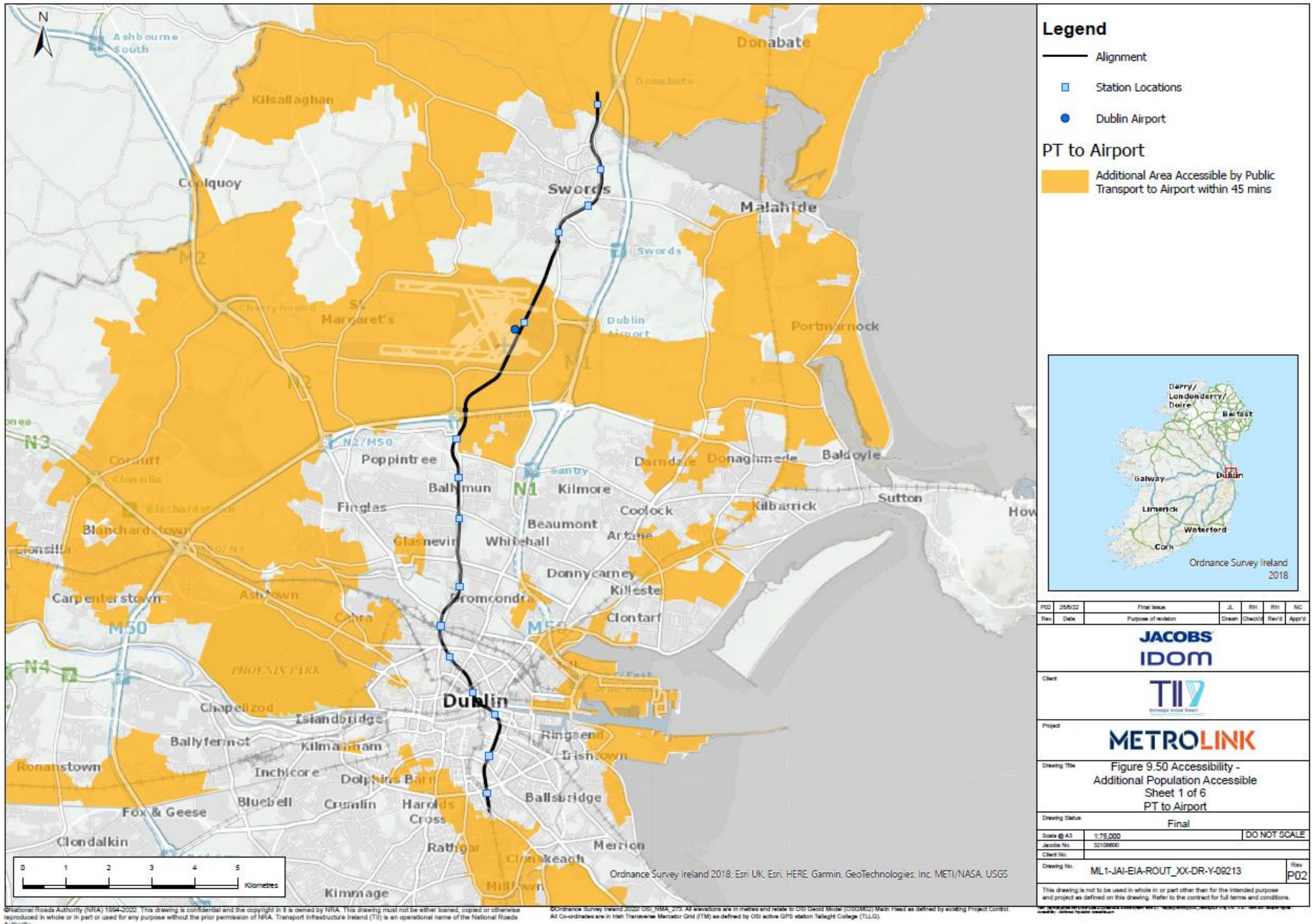

Figure 6.6: Accessibility to Dublin Airport in the morning peak by Public Transport

Table 6.14 presents the population within a 45-minute journey by public transport to Dublin Airport, between the Opening Year + 30Yrs in both the Do Minimum and Do Something scenarios. In OY+30Yrs, there is an additional 341,690 people who are able to access Dublin Airport within 45minutes using public transport. Table 6.15 presents the population within a 45-minute journey by public transport from Dublin Airport. In OY+30Yrs, there is an additional 378, 715 people who are able to access the surrounding areas within 45minutes from Dublin Airport, using public transport.

Table 6.14: Population within 45-minute PT Journey to Dublin Airport

Population within 45-minute PT journey to Dublin Airport												
Year	Do Minimum (in minutes)				Do Something (in minutes)				Difference (in minutes)			
	0-15	15-30	30-45	0-45	0-15	15-30	30-45	0-45	0-15	15-30	30-45	0-45
OY	9,419	163,218	487,122	659,759	21,623	234,785	544,288	800,696	12,204	71,567	57,166	140,937
OY+10Yrs	11,361	176,220	524,280	711,861	27,223	249,985	586,114	863,322	15,862	73,765	61,834	151,462
OY+15Yrs	8,641	158,093	472,324	639,058	29,722	259,667	610,874	900,262	21,080	101,574	138,549	261,204
OY+30Yrs	9,614	164,520	490,864	664,998	37,224	289,530	679,935	1,006,688	27,609	125,010	189,071	341,690

Table 6.15: Population within 45minute PT Journey from Dublin Airport

Population within 45-minute PT journey from Dublin Airport												
Year	Do Minimum (in minutes)				Do Something (in minutes)				Difference (in minutes)			
	0-15	15-30	30-45	0-45	0-15	15-30	30-45	0-45	0-15	15-30	30-45	0-45
OY	17,549	162,897	479,955	660,402	25,940	232,951	576,769	835,660	8,391	70,054	96,813	175,258
OY+10Yrs	19,971	177,080	512,910	709,961	31,083	248,826	618,279	898,189	11,112	71,746	105,370	188,228
OY+15Yrs	16,580	157,306	466,852	640,738	33,480	258,736	643,453	935,669	16,900	101,429	176,601	294,931
OY+30Yrs	17,793	164,320	483,285	665,398	40,671	288,910	714,533	1,044,113	22,877	124,590	231,248	378,715

Appendix A presents other locations that have been assessed in terms of journey time savings and accessibility including:

- Swords;
- Dublin City University;
- Dublin City Centre;
- Docklands; and,

- St Stephen's Green.

6.1.3 Network Statistics

Table 6.16 presents the public transport network statistics in the Do Minimum and Do Something scenarios in 2035, 2050 and 2065 during the AM and PM 3h period within the Project's Area of Influence. In all scenarios, the total passenger km is higher in the PM period

In total, there is an increase of approximately 145,000 passenger km on Public Transport between the Do Minimum and Do Something scenarios in 2035 AM period, equating to an increase of 6%. In 2050, the total passenger km travelled by Public Transport increases by approximately 225,000, or 7% when comparing the two scenarios. In 2065, the total passenger km travelled by Public Transport over the AM period increases by over 344,000 when the proposed Project is in place, equating to a 10% increase between the two scenarios.

Table 6.16: Scenario A - AM 3hr Period Do Minimum and Do Something Public Transport Statistics

Network Statistics	Mode	2035			2050			2065		
		Do Minimum	Do Something	Diff	Do Minimum	Do Something	Diff	Do Minimum	Do Something	Diff
Passenger Km	Bus	1,264,718	1,020,719	-19%	1,433,825	1,141,207	-20%	1,610,782	1,278,872	-21%
	Rail	934,527	929,733	-1%	1,166,849	1,205,967	3%	1,419,955	1,516,801	7%
	Luas	375,410	369,076	-2%	441,504	441,866	0%	514,062	522,593	2%
	Metro	-	400,062		-	478,492		-	570,809	
	Total	2,574,654	2,719,590	6%	3,042,179	3,267,532	7%	3,544,799	3,889,074	10%

In total, there is an increase of approximately 170,000 passenger km, or 6%, on Public Transport between the Do Minimum and Do Something scenarios in 2035 PM peak period. In 2050, the total passenger km travelled by Public Transport increases by approximately 268,000, or 9%, when comparing the two scenarios. In 2065, the total passenger km travelled by Public Transport over the PM period increases by approximately 441,000, or 12% when the proposed Project is in place.

Table 6.17: Scenario A PM 3hr Period Public Transport Network Statistics

Network Statistics	Mode	2035			2050			2065		
		Do Minimum	Do Something	Diff	Do Minimum	Do Something	Diff	Do Minimum	Do Something	Diff
Passenger Km	Bus	1,236,047	1,039,571	-16%	1,380,944	1,153,962	-16%	1,519,362	1,270,002	-16%
	Rail	1,063,600	1,063,743	0%	1,331,854	1,361,694	2%	1,609,571	1,714,099	6%
	Luas	353,991	352,257	0%	416,218	419,443	1%	486,635	495,724	2%
	Metro	-	369,003		-	461,574		-	577,106	
	Total	2,653,638	2,824,574	6%	3,129,015	3,396,673	9%	3,615,568	4,056,931	12%

Table 6.18 presents the public transport network statistics in the Do Minimum and Do Something scenarios in Scenario B 2035, 2050 and 2065 during the AM 3h period, with Table 6.19 presenting the PM 3h period statistics. In all scenarios, the total passenger km is higher in the PM period. When comparing the two scenarios during the AM period, in total, there is an increase of approximately 137,200 passenger km between the Do Minimum and Do Something scenarios in 2035 AM period, equating to an increase of 5%. In 2050, the total passenger km travelled increases by approximately 202,000, or 6% when comparing the two scenarios. In 2065, the total passenger km travelled over the AM period increases by over 236,400 when the proposed Project is in place, which is an increase of 6%.

Table 6.18: Scenario B – AM 3hr Period Do Minimum and Do Something Public Transport Statistics

Network Statistics	Mode	2035			2050			2065		
		Do Minimum	Do Something	Diff	Do Minimum	Do Something	Diff	Do Minimum	Do Something	Diff
Passenger Km	Bus	1,107,260	887,141	-20%	1,102,110	883,188	-20%	1,231,367	970,647	-21%
	Rail	1,397,654	1,375,668	-2%	1,523,673	1,484,887	-3%	1,824,559	1,757,376	-4%
	Luas	337,330	332,233	-2%	534,625	530,975	-1%	611,610	611,522	0%
	Metro	-	384,412		-	463,341		-	564,469	
	Total	2,842,254	2,979,454	5%	3,160,408	3,362,391	6%	3,667,535	3,904,014	6%

In the Scenario B PM 3hr period, in total, there is an increase of approximately 137,200 passenger km between the Do Minimum and Do Something scenarios in 2035 PM peak period, equating to an increase of 5%. In 2050, there is an increase of approximately 240,000 passenger km when comparing the two scenarios. In 2065, the total passenger km travelled over the PM period increases by almost 200,800 or 5%, when the proposed Project is in place. As such, Scenario A sees greater percentage increases in total passenger km travelled in all years, however Scenario B has a greater absolute passenger km than Scenario A.

Table 6.19: Scenario B PM 3hr Period Public Transport Network Statistics

Network Statistics	Mode	2035			2050			2065		
		Do Minimum	Do Something	Diff	Do Minimum	Do Something	Diff	Do Minimum	Do Something	Diff
Passenger Km	Bus	1,114,472	933,622	-16%	1,139,407	954,132	-16%	1,273,201	1,048,733	-18%
	Rail	1,553,788	1,535,623	-1%	1,638,592	1,610,140	-2%	1,955,416	1,913,607	-2%
	Luas	318,303	318,916	0%	516,068	517,080	0%	595,100	598,549	1%
	Metro	-	335,627		-	452,720		-	463,618	
	Total	2,986,563	3,123,789	5%	3,294,067	3,534,072	-7%	3,823,716	4,024,506	-5%

6.1.4 Public Transport Flows

Figure 6.7 and Figure 6.8 illustrate the change in public transport link flows between the Do Minimum and Do Something scenarios, in Scenario A 2035 and Scenario B 2035 AM peak hours respectively.

There are large reductions in PT flow along the DART Northern Coastal Line, as well as reductions of up to 5,000 trips on the bus network around the R132 Swords Bypass, along the Port Tunnel and within Dublin City Centre. Increases of up to 250 trips can be seen on the Luas Red and Green Lines as well as the Maynooth and Kildare heavy rail lines, which all have interchange opportunities with the Project in Dublin City Centre.

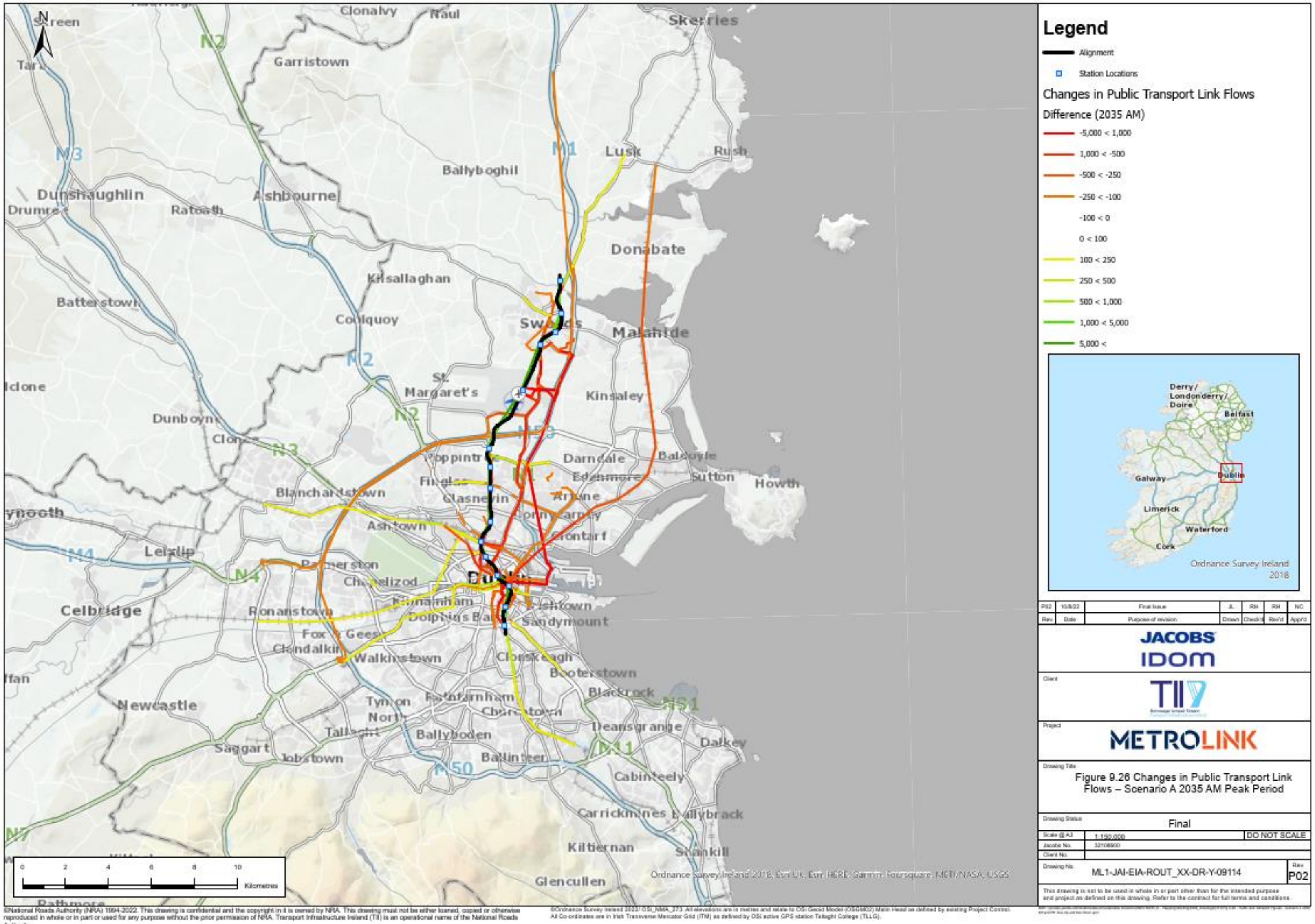

Figure 6.7: Change in Public Transport Flows in Scenario A 2035 Do Something AM Period

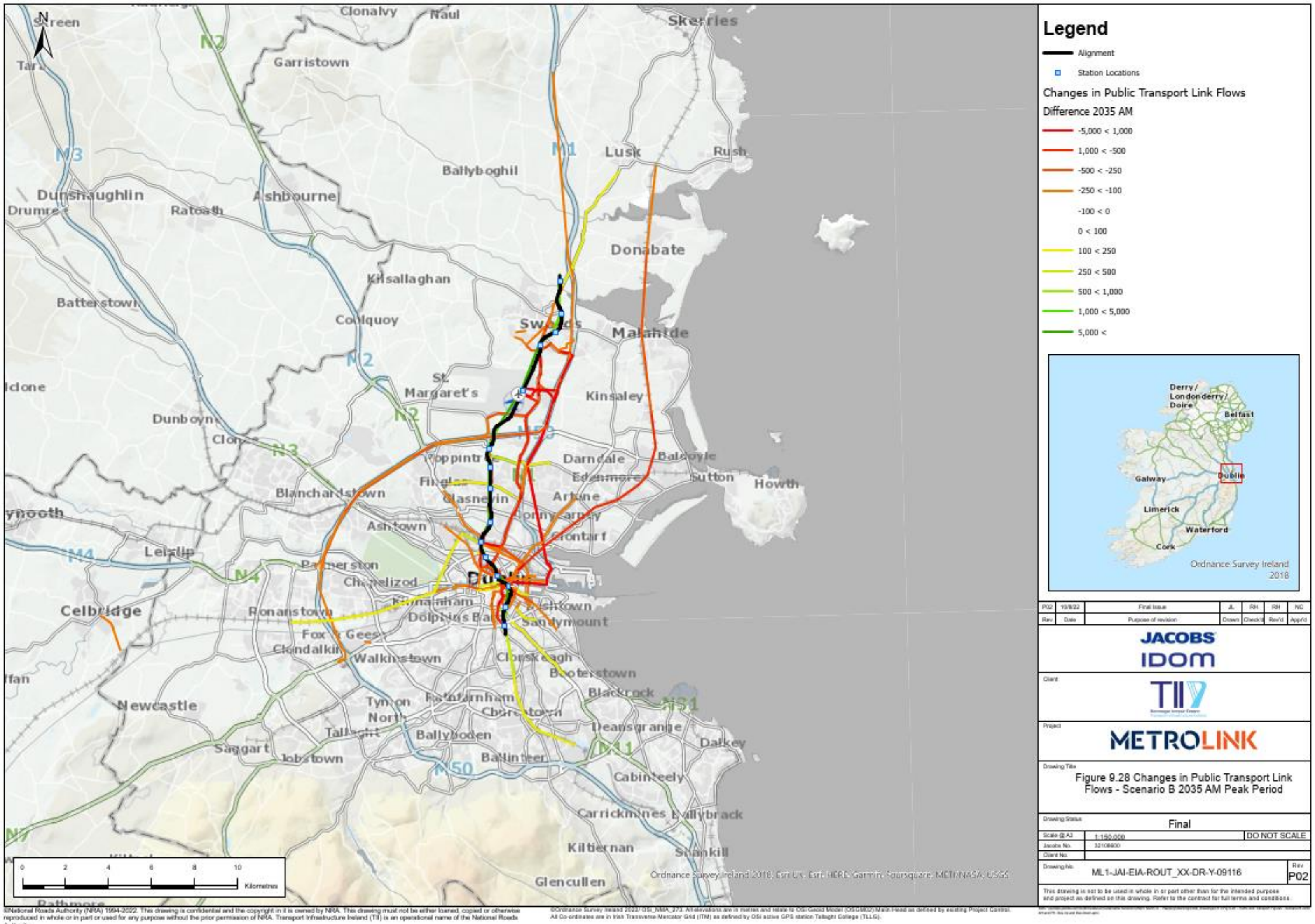

Figure 6.8: Change in Public Transport Flows in Scenario A 2035 Do Something AM Period

Table 6.20 and Table 6.21 present the changes in public transport flows on other light and heavy railway as result of the proposed Project, during the AM and PM peak hours between the Do Minimum and Do Something scenarios in Scenario A. The AM peak hour is defined as 08:00-09:00, and the PM peak hour is defined as 17:00-18:00.

In the AM peak hour, the 2035 scenario sees flows on the DART Coastal Northern Line decrease by 5%, however this reduction decreases to 0% in 2065. As identified in 4.2.2.6, this service is operating under capacity, however approaching the 0.8 threshold of 'near capacity' in the baseline conditions, and therefore a reduction in usage on this line will improve levels of service on the line.

The largest increase is seen on the Maynooth Line in 2065, which sees flows increase by 9% in 2035, as a result of the opportunity to interchange with the Project at Glasnevin Station. This increases to a 15% increase in flows in 2065. As identified in 4.2.2.6,, this service is operating under capacity in the Do Minimum scenario, an increase in passenger numbers will not reduce the level of comfort for passengers.

In the PM peak hour, the Kildare Line and Luas Red Line which see the largest increase in usage at 13% respectively when the proposed Project is in place. The Maynooth Line sees a 10% increase in usage. As identified in 4.2.2.6, each of these lines are operating under capacity in the Do Minimum scenario, and therefore increases in flows will not reduce the passenger comfort levels on these services.

Table 6.20: Changes in Public Transport Flows due to proposed Project – AM Peak Hour Scenario A

Public Transport Line	2035 Do Minimum	Change with the Project 2035	% Change 2035	2050 Do Minimum	Change with the Project 2050	% Change 2050	2065 Do Minimum	Change with the Project 2065	% Change 2065
DART Coastal Northern Line	9,200	- 453	**-5%**	11,375	- 332	**-3%**	13,722	- 56	**0%**
DART Coastal South-East Line	6,561	41	**1%**	7,403	355	**5%**	8,370	526	**6%**
Kildare Line	4,192	183	**4%**	5,398	490	**9%**	6,818	895	**13%**
Maynooth Line	3,624	313	**9%**	4,602	503	**11%**	5,761	885	**15%**
Luas Red Line	6,177	251	**4%**	7,123	659	**9%**	8,354	816	**10%**
Luas Green Line (South of Charlemont)	8,583	468	**5%**	9,571	661	**7%**	10,692	1,035	**10%**

Table 6.21: Changes in Public Transport Flows due to proposed Project – PM Peak Hour Scenario A

Public Transport Line	2035 Do Minimum	Change with the Project 2035	% Change 2035	2050 Do Minimum	Change with the Project 2050	% Change 2050	2065 Do Minimum	Change the Project 2065	% Change 2065
DART Coastal Northern Line	8,927	- 342	**-4%**	11,031	- 514	**-5%**	13,023	- 168	**-1%**
DART Coastal South-East Line	5,313	63	**1%**	6,284	218	**3%**	7,321	343	**5%**
Kildare Line	4,621	92	**2%**	5,854	379	**6%**	7,325	930	**13%**
Maynooth Line	4,126	284	**7%**	5,297	391	**7%**	6,621	694	**10%**
Luas Red Line	5,849	275	**5%**	6,800	604	**9%**	7,901	994	**13%**
Luas Green Line (South of Charlemont)	6,867	394	**6%**	7,702	552	**7%**	8,803	689	**8%**

Table 6.22 and Table 6.23 present the changes to public transport flow on the heavy and light rail networks when the proposed Project is in place in Scenario B. Notable changes occur in 2035 both AM and PM with the DART North Coastal Line seeing a reduction of 14% in the 2035 AM peak hour, increasing to an 8% reduction in 2065. In the PM peak hour, there is 5% reduction in 2035, increasing to a 6% reduction in 2065. As identified in section 4.2.2.6, the DART Coastal Northern Line is operating under capacity in the Do Minimum scenario in Scenario B.

The largest increase in the AM peak hour is seen on the Luas Green Line, with flows increasing by 6% in the 2035 and 2050 scenarios, and by 5% in 2065 Do Something scenario, whereas the Luas Red Line sees the largest increase in the 2065 PM, with an increase of 8%. Both services operate under capacity in the Do Minimum scenario and therefore this increase is a positive impact on Luas services. In 2030, the Kildare Line sees an 3% increase in flows in both peak hours, however this decreases to a 0% change in 2050, and an increase of 2% in 2065. The Kildare line operates under capacity in the Do Minimum scenario, as identified in section 4.2.2.6.

Table 6.22: Changes in Public Transport Flows due to proposed Project – AM Peak Hour Scenario B

Public Transport Line	2035 Do Minimum	Change with the Project 2035	% Change 2035	2050 Do Minimum	Change with the Project 2050	% Change 2050	2065 Do Minimum	Change with the Project 2065	% Change 2065
DART Coastal Northern Line	11,189	- 492	-4%	12,588	31	0%	15,067	- 1,256	-8%
DART Coastal South-East Line	6,475	- 51	-1%	7,023	- 227	-3%	7,952	- 244	-3%
Kildare Line	7,589	238	3%	10,171	32	0%	12,355	225	2%
Maynooth Line	9,436	115	1%	12,138	- 177	-1%	14,437	- 215	-1%
Luas Red Line	5,315	40	1%	5,485	199	4%	5,847	301	5%
Luas Green Line (South of Charlemont)	8,334	469	6%	12,462	754	6%	14,005	758	5%

Table 6.23: Changes in Public Transport Flows due to proposed Project – PM Peak Hour Scenario B

Public Transport Line	2035 Do Minimum	Change with the Project 2035	% Change 2035	2050 Do Minimum	Change with the Project 2050	% Change 2050	2065 Do Minimum	Change with the Project 2065	% Change 2065
DART Coastal Northern Line	10,555	- 519	-5%	11,714	- 128	-1%	13,894	- 837	-6%
DART Coastal South-East Line	5,356	- 28	-1%	5,750	- 112	-2%	6,581	- 144	-2%
Kildare Line	8,258	227	3%	10,764	- 32	0%	12,585	297	2%
Maynooth Line	7,991	121	2%	10,066	- 16	0%	12,446	- 87	-1%
Luas Red Line	4,895	157	3%	5,540	317	6%	6,111	463	8%
Luas Green Line (South of Charlemont)	6,552	462	7%	10,154	580	6%	11,501	622	5%

The proposed Project will primarily result in a reduction in the number of bus trips in the area, the only exception to this being bus services to the north from Donabate area, where the additional bus passengers may require the provision of some additional services to/from the Park and Ride.

The transfer of bus passengers along the Swords, Ballymun, Santry and Port Tunnel will free up capacity of the existing services to allow them to accommodate more people closer to Dublin City Centre. This could allow for either improvements in the journey speeds for buses or a more availability for passengers within the M50 corridor to access the bus services.

6.2 Vehicle Traffic

As noted in section 2.9.2, a Park and Ride facility will be provided at Estuary Station as part of the proposed Project. As such, all Do Something model scenarios include the operation of this facility.

6.2.1 Car Mode Share

In Scenario A 2035, Car mode share decreases by 0.3 percentage points from 57.28% to 57%. In the 2050 scenario, Car mode share decreases by 0.55 percentage points from 55.73% to 55.18%, indicating a modal shift from private vehicles to public transport when proposed Project is in place. In 2065, Car mode share falls by 0.82 percentage points from 54.13% to 53.31%.

In Scenario B 2035, Car mode share decreases by 0.3 percentage points from 56.9% in the Do Minimum scenario, to 56.6% in the Do Something scenario. In 2050, Car mode share decreases by 0.4 percentage points from 55.12% to 54.73%. In 2065, Car mode share decreases by 0.31 percentage points from 53.46% to 53.16%.

6.2.2 Changes in AADT

As presented in section 5.3.5, in Scenario A in 2035, the largest reductions can be seen on the M1, where there are reductions of over 5,000 AADT. These reductions can be seen along the M1 to Dublin Airport, with reductions of up to 2,500 AADT along the M50. Along the R132, there are reductions of between 2,500 and 5,000 AADT. Increases of up to 2,000 AADT can be seen on the On and Off-slips at the M1 Lissenhall Junction, which is in close proximity to the Estuary Park and Ride facility. Reductions in AADT traffic flow can also be seen along key national routes such as the M3, M4, M7/M9 and M11. This relates to the transfer of road passengers onto the public transport network, utilising the Maynooth, Kildare and Cork rail lines. In 2050 and 2065, the R132 sees further reductions of over 5,000 AADT when the Project is in place. The Port Tunnel sees reductions of between 2,500 and 5,000 AADT. Large reductions of over 5,000 AADT continue to be seen along the M1 to Dublin Airport and onto the M50. In all years, reductions of between 100 and 500 AADT can be seen on the network within Dublin City Centre.

In Scenario B 2035, the M1 in the Swords area sees reductions of up to 2,500 AADT, however there are reductions of over 5,000 AADT at the Dublin Airport/M1 Junction. Much of Dublin City Centre sees negligible changes. National roads such as the M, M4, M7/9 and M11 see reductions of between 1,000 and 5,000 AADT. In 2050, links in Dublin City Centre see reductions of up to 250 AADT. Due to the introduction of other public transport infrastructure in Scenario B, the cumulative improvement of the public transport network in the Do Something means that road capacity is freed, and therefore slight increases in AADT can be seen along the M50, with increases of between 250 and 500 AADT. Similar increases in AADT ca be seen in the Port Tunnel. However, in 2065, there are more widespread reductions of up 500 AADT within Dublin City Centre, along the M50 and in the Swords area.

6.2.3 Changes in Road Travel Time

Figure 6.9 to Figure 6.14 shows the changes in road travel time with the proposed Project in place in the AM peak hours in 2035, 2050 and 2065 in both Scenario A and Scenario B. In Scenario A 2035 AM peak hour, road travel time is reduced by up to 500s (~8 mins) on the on-slip at the M1 Lissenhall Junction as a result of the presence of the Park and Ride. Road travel time savings of up to 250s (~4mins) can be seen at Dublin Airport and along the R132 Swords Bypass. Individual sections of the M50 and links within Dublin City Centre see minimal road travel time savings of up to 25s.

In Scenario A 2050 similar results can be seen at the M1 Lissenhall Junction On-Slip and at Dublin Airport. Where the M50 joins the M1, an increase in road travel time can be seen of up to 50s, however much of the M50 sees road travel time savings of between 25 and 100s.

In Scenario A 2065, there are slight increases in road travel time on the M1 Lissenhall Junction Off-Slip, with increases in road travel time of up to 25s. The R132 Swords Bypass and Links leading to and from Dublin Airport continue to see road travel time savings in this scenario. The Port Tunnel sees road travel time savings of up to 25s, as well as the section of the M50 in the vicinity of the Northwood Station.

In Scenario B 2035, there are negligible changes in road travel time on the road network, with variations in travel time of up to 10s on the M1, M50 and R132 Swords Bypass. The R132 on the northbound approach to the Park and Ride facility sees an increase in road travel time of up to 25s.

In Scenario B 2050, increases in road travel time of up to 25s can be seen on the M1 north of the Park and Ride facility, however the R132 sees savings of 100s. At Dublin Airport, road travel time savings of up to 250s (~4mins) can be seen on the Corballis Road North and T2 Departures Road. Individual sections of the M50 and locations within Dublin City Centre see negligible variations in road travel time.

In Scenario B 2065, the M1 sees road travel time savings of up to 25s south of the Lissenhall Junction, with negligible changes north of the Park and Ride. This increases to a saving of up to 100s on the M1 on approach on Dublin Airport. The R132 Swords Bypass also sees negligible changes to road travel time in this scenario. The internal road network at Dublin Airport sees road travel time savings of up to 1,000s (~16mins) on the Arrivals Road to the south of Terminal 1, with the T2 Departures Road sees reductions of up to 250s (~4mins).

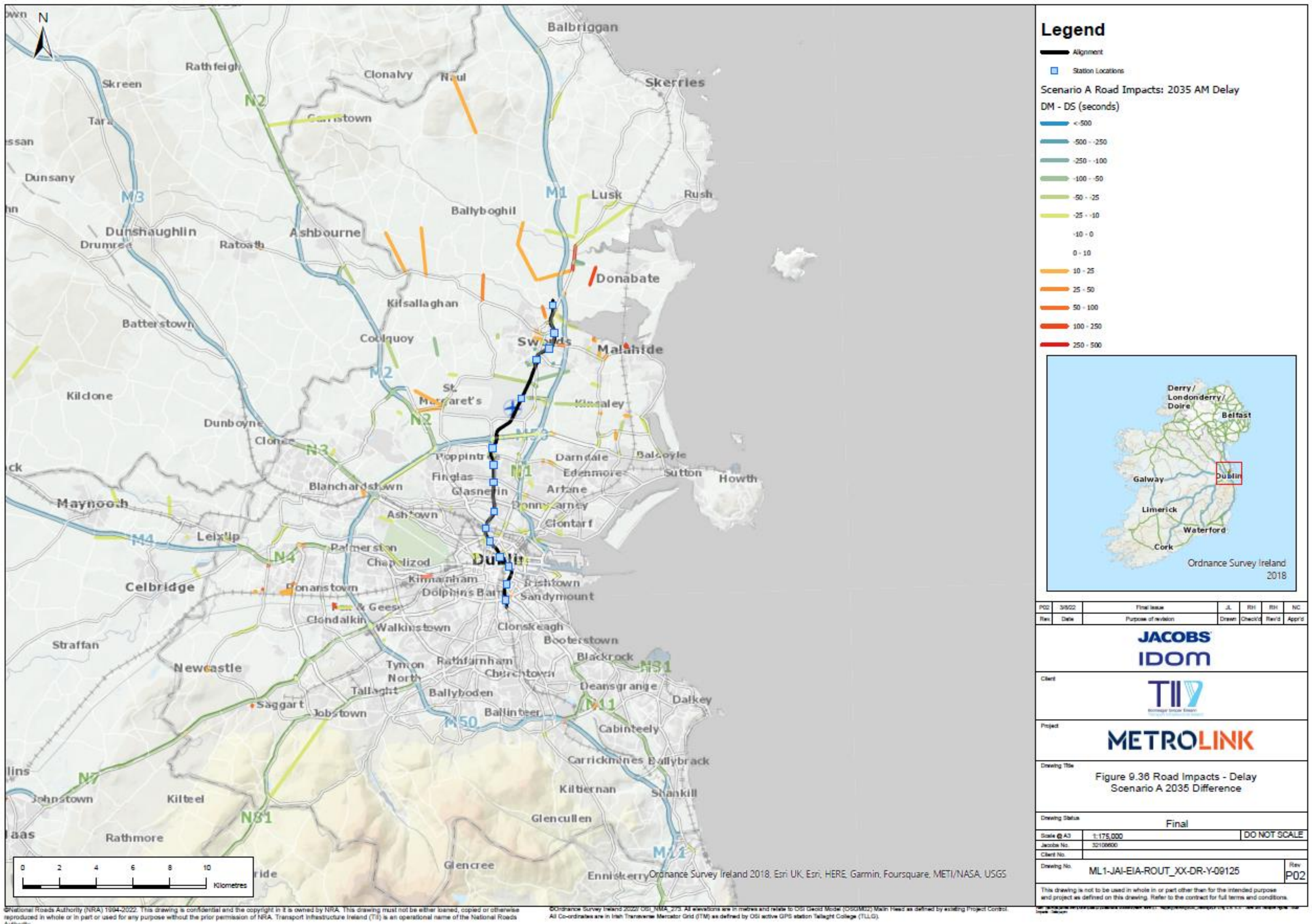

Figure 6.9: Change in Road Travel Time in Scenario A 2035 AM Peak Hour

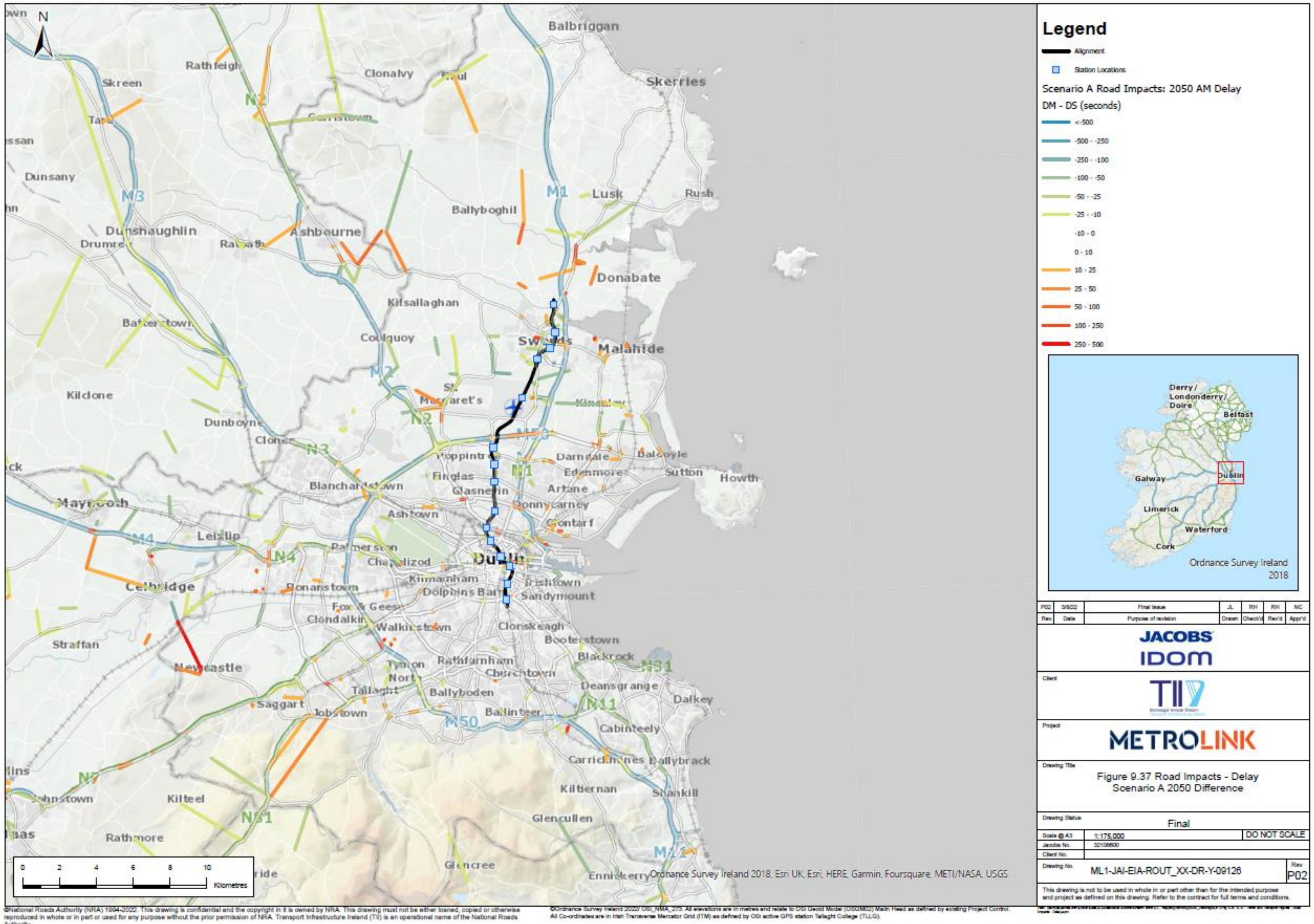

Figure 6.10: Change in Road Travel Time in Scenario A 2050 AM Peak Hour

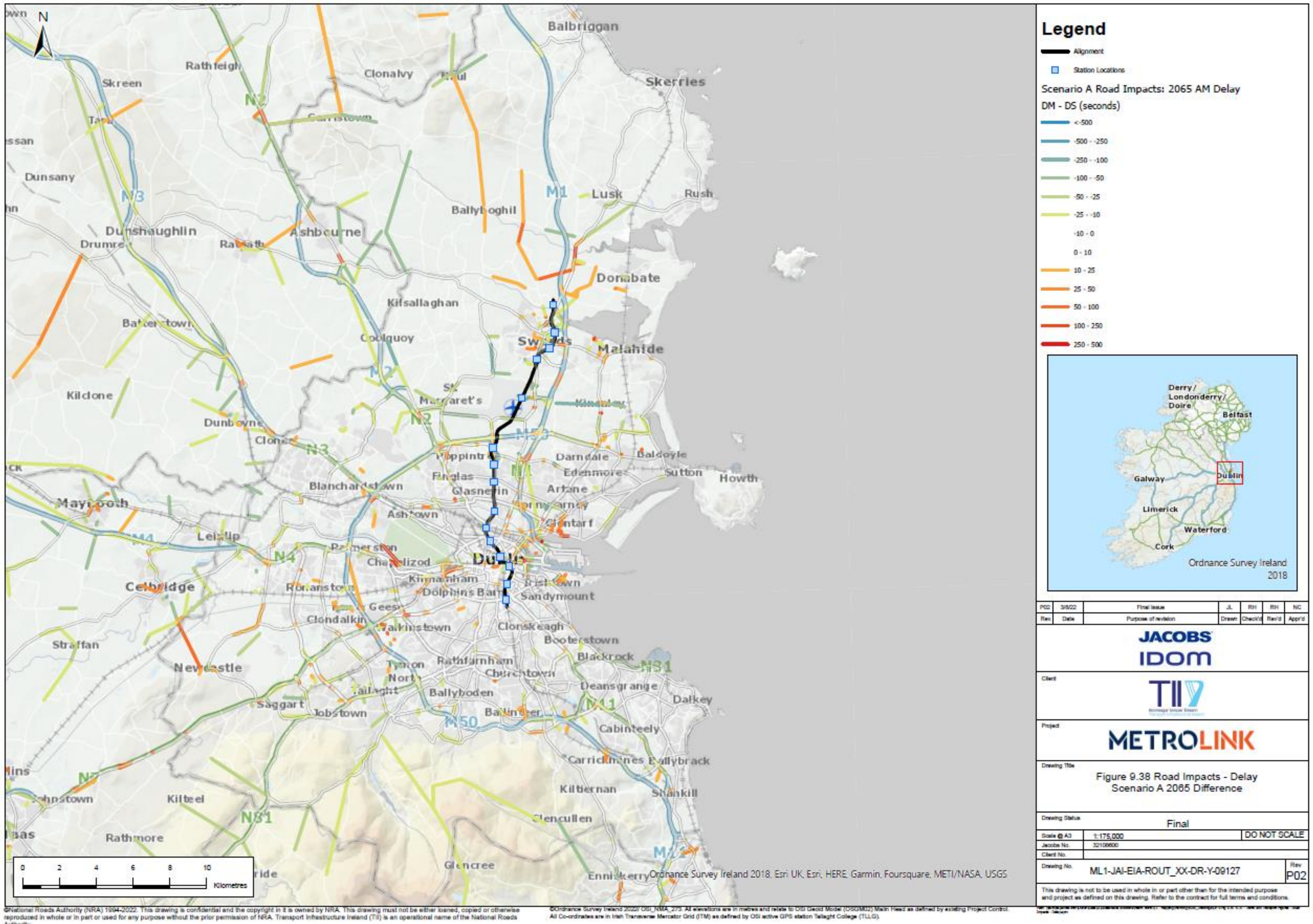

Figure 6.11: Changes in Road Travel Time in Scenario A 2065 AM Peak Hour

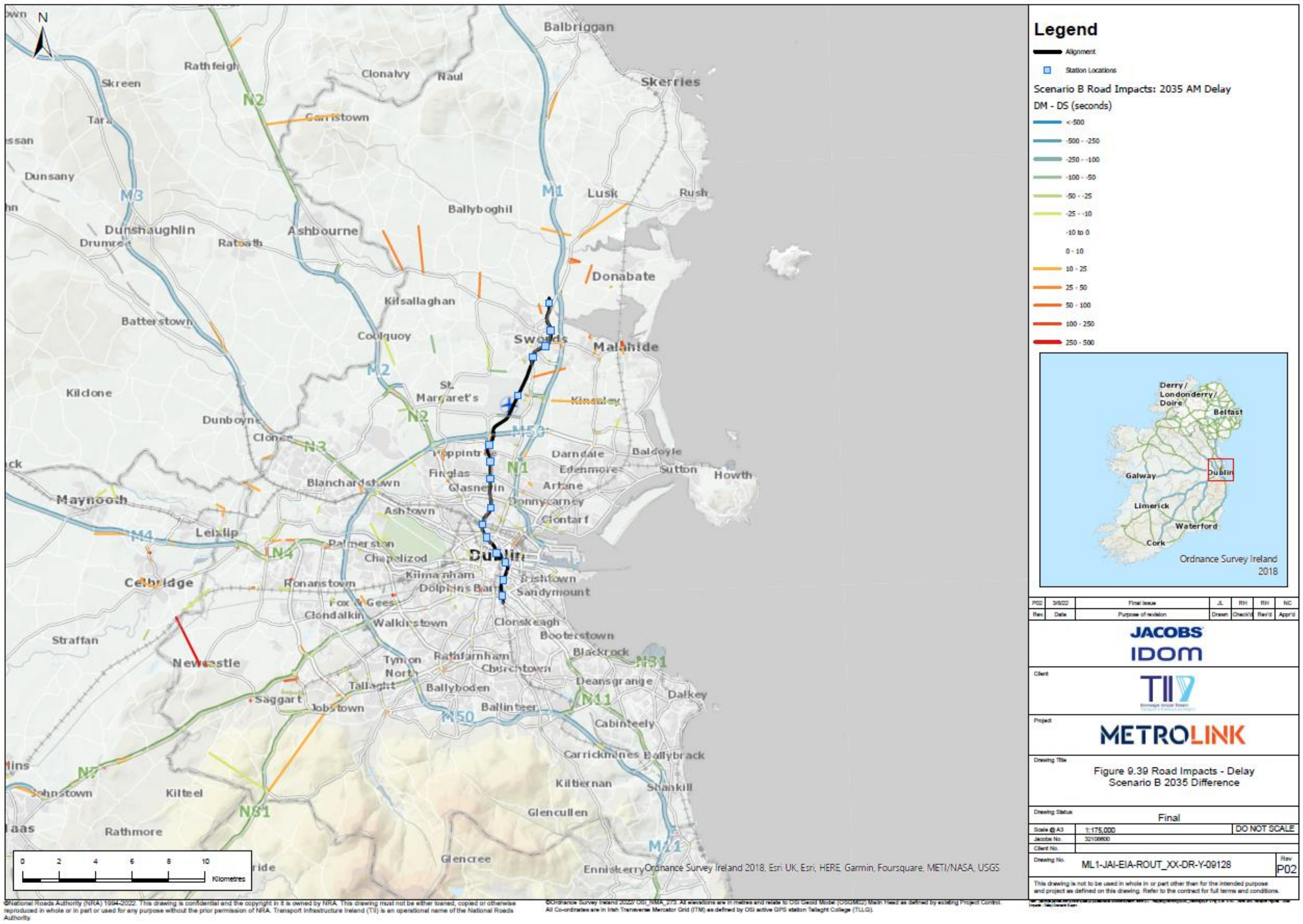

Figure 6.12: Changes in Road Travel Time in Scenario B 2035 AM Peak Hour

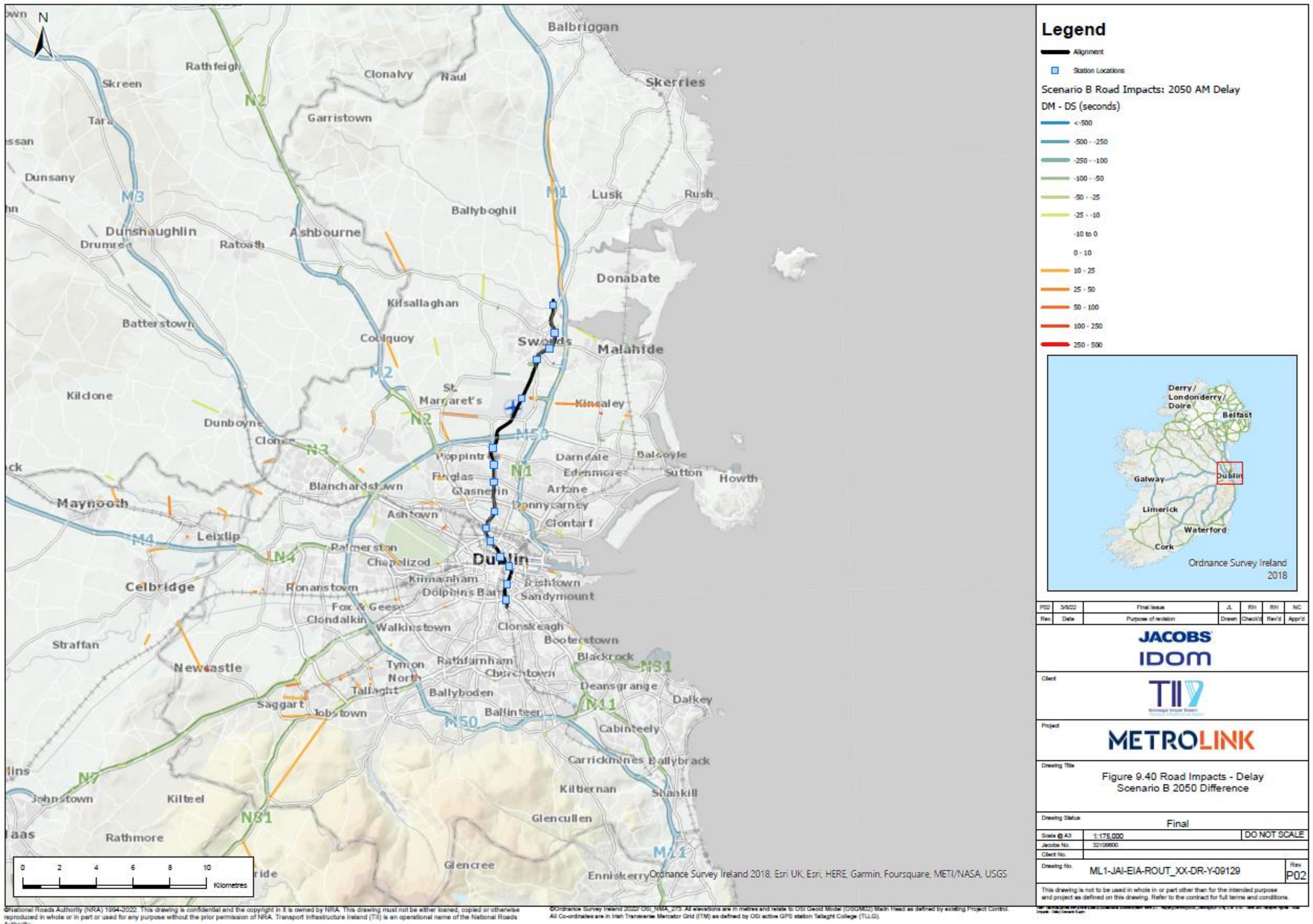

Figure 6.13: Changes in Road Travel Time in Scenario B 2050 AM Peak Hour

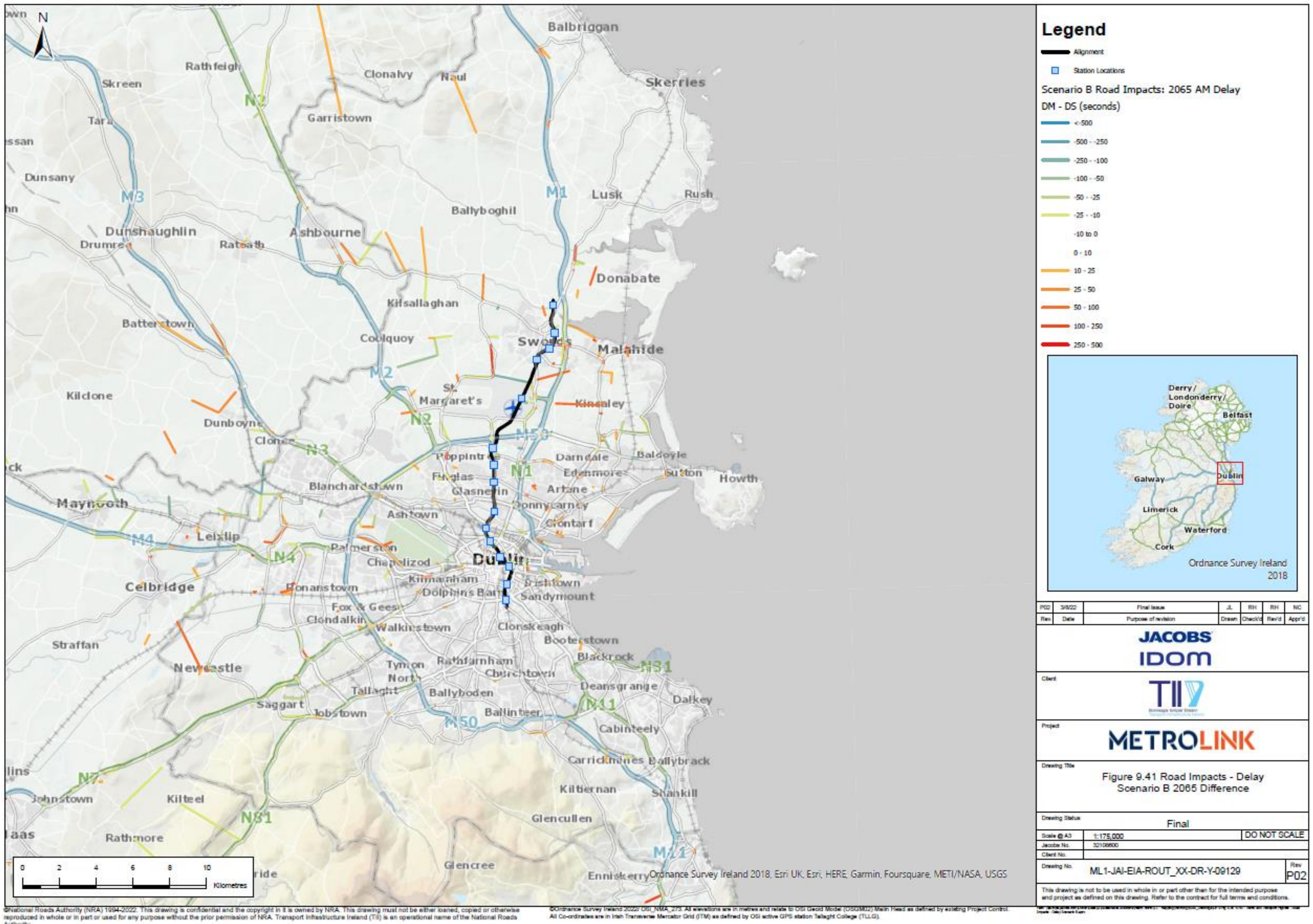

Figure 6.14: Changes in Road Travel Time in Scenario B 2065 AM Peak Hour

A high-level summary of network statistics for the model comparing the Do Minimum and Do Something scenarios for the AM and PM periods are presented in Table 6.24 to Table 6.27. In both Scenario A and Scenario B, a reduction can be seen in the road distance travelled in the AM and PM periods when comparing the Do Minimum and Do Something scenarios, with the highest reduction of 3% in 2065 in Scenario A PM Peak Period.

The largest reductions in Road travel time can be seen in 2065 Scenario A in both the AM and PM peak periods, with a reduction of 5% in the AM peak period, and a reduction of 4% in the PM peak period. Scenario B sees no change to Road travel time in 2065 in either the AM or PM peak periods.

Table 6.24: Scenario A AM Peak Period Summary Network Statistics

Network Statistics	2035			2050			2065		
	Do Minimum	Do Something	Diff	Do Minimum	Do Something	Diff	Do Minimum	Do Something	Diff
Total Road Travel Time (PCU.hrs per peak period)	365,228	361,231	-1%	439,065	424,121	-3%	512,493	487,317	-5%
Total Road Distance Travelled (PCU.km per peak period)	14,417,697	14,391,811	-0.2%	16,010,097	15,598,910	-2.6%	17,263,083	16,633,043	-3.6%
Average Road Network Speed (kph)	38.6	38.7	0.2%	37.7	37.8	0.3%	36.9	37.0	0.4%

Table 6.25 Scenario B AM Peak Period Summary Network Statistics

Network Statistics	2035			2050			2065		
	Do Minimum	Do Something	Diff	Do Minimum	Do Something	Diff	Do Minimum	Do Something	Diff
Total Road Travel Time (PCU.hrs per peak period)	363,521	361,212	-1%	336,700	333,971	-1%	401,324	402,246	0%
Total Road Distance Travelled (PCU.km per peak period)	14,259,221	14,235,538	-0.2%	14,380,597	14,425,745	0.3%	15,772,179	15,870,371	0.6%
Average Road Network Speed (kph)	39.1	39.1	0.1%	40.5	40.5	0.2%	39.5	39.5	-0.1%

In the PM peak period, Scenario A sees greater reductions in total road distance travelled in both 2055 and 2065 than Scenario B when the proposed Project is in place.

Table 6.26: Scenario A PM Peak Period Summary Network Statistics

Network Statistics	2035			2050			2065		
	Do Minimum	Do Something	Diff	Do Minimum	Do Something	Diff	Do Minimum	Do Something	Diff
Total Road Travel Time (PCU.hrs per peak period)	339,951	337,529	-1%	397,340	384,917	-3%	453,435	436,305	-4%
Total Road Distance Travelled (PCU.km per peak period)	13,791,124	13,786,946	0.0%	15,149,517	14,764,919	-2.5%	16,320,545	15,722,416	-3.7%
Average Road Network Speed (kph)	39.5	39.5	0.0%	38.7	38.8	0.1%	38.0	38.2	0.4%

Table 6.27: Scenario B PM Peak Period Summary Network Statistics

Network Statistics	2035			2050			2065		
	Do Minimum	Do Something	Diff	Do Minimum	Do Something	Diff	Do Minimum	Do Something	Diff
Total Road Travel Time (PCU.hrs per peak period)	340,337	338,518	-1%	314,198	315,994	1%	369,071	367,558	0%
Total Road Distance Travelled (PCU.km per peak period)	13,572,426	13,549,604	-0.2%	13,758,393	13,917,419	1.2%	15,100,811	15,089,924	-0.1%
Average Road Network Speed (kph)	40.0	40.0	0.1%	40.5	41.5	2.4%	40.6	40.6	0.0%

6.3 Pedestrians

The passenger forecast numbers have been utilised to understand the potential impact of the proposed Project on the receiving pedestrian environment. The passenger forecasts have been assigned onto the pedestrian network and combined with forecasted pedestrian numbers to determine whether the footways are of sufficient width to accommodate the pedestrian movements in the vicinity of the future stations. Crossing facilities impacted by the Project have been assessed in the individual station specific TTAs, such as at Ballymun.

The Dublin City Council document "*The Heart of Dublin- City Centre Public Realm Masterplan*" is the primary guidance for the design and management of the public realm in Dublin. The 'Pedestrian Space Calculator' was *'developed as part of this process to take account of all uses on the pedestrian space as well as the volume of users and is intended as the primary guidance mechanism for space allocation for pedestrians.'*

From this, streets are categorised as Low, Moderate, High or Very High footfall based on the number of persons per hour. A 'Circulation Zone' is recommended for each category, suggesting the minimum unobstructed pavement width for the volume of people, as detailed below.

The guidelines indicate the following:

- Low Footfall = <600 pedestrians per hour, requires minimum 2m circulation zone;
- Moderate Footfall = 600-1200 pedestrians per hour, requires minimum 3m circulation zone;
- High Footfall = 1200-3000 pedestrians per hour, requires a minimum 4m circulation zone;
- Very High Footfall = >3000 pedestrians per hour, requires minimum 6m circulation zone.

Using this guidance, baseline conditions were assessed first to understand the current comfort levels without the addition of passengers and then passengers were assigned by the model (including population forecasts in the design years) to assess the impact the proposed Project will have on the network.

Links which fell below the recommended circulation zone width for the respective volume of pedestrians per hour were then assessed using the Transport for London (TfL) Pedestrian Comfort Guidance for London- Pedestrian Comfort Assessment. The TfL Pedestrian Comfort Guidance provides different comfort level for footways and takes into consideration the location of the footway, the numbers of pedestrians using it and the clear width of the footway.

For the purposes of the assessment, it was assumed that all of the proposed Project's pedestrian movements are 'new' onto the network, i.e. that they are not currently occurring along this section of the footway network. This is a conservative estimate as some of the proposed Project's passengers will be existing users of the areas.

The impacts on pedestrian comfort levels across the network have been assessed in the 2018 Base scenario, and the 2050 and 2065 Scenario A. All scenarios have been assessed in the AM Peak Hour (08:00-09:00) for this analysis. The Scenario A 2050 design year was assessed, with Scenario A 2065 also assessed as the 'worst-case scenario' for passenger numbers, as this scenario has the highest volume of total AM passenger demand in the future year between both Scenario A and Scenario B (almost 61,000 AM boarding passengers across the alignment in Scenario A, compared to almost 55,000 AM boarding passengers in Scenario B). At all stations, the passenger demand in the AM peak hour is lower in Scenario B than in Scenario A, with the exception of Fosterstown Station where there is a 12% increase in Scenario B. As such, Scenario B has not been assessed, with the exception of Fosterstown Station to ensure that all possible significant impacts are accounted for.

Figure 6.15 shows an assessment of the pedestrian network in Scenario A 2065. The colour code indicates the following:

- The Dark Green coloured footways meet with the guidelines from DCC
- Light green does not meet with DCC guidelines, but the comfort levels would meet with 'Comfortable' based on TfL guidance document.
- Amber does not meet with DCC guidelines, but the comfort levels would meet with 'Acceptable' based on TfL guidance document.
- Red does not meet with DCC guidelines, and the comfort levels would meet with 'Unacceptable' based on TfL guidance document.

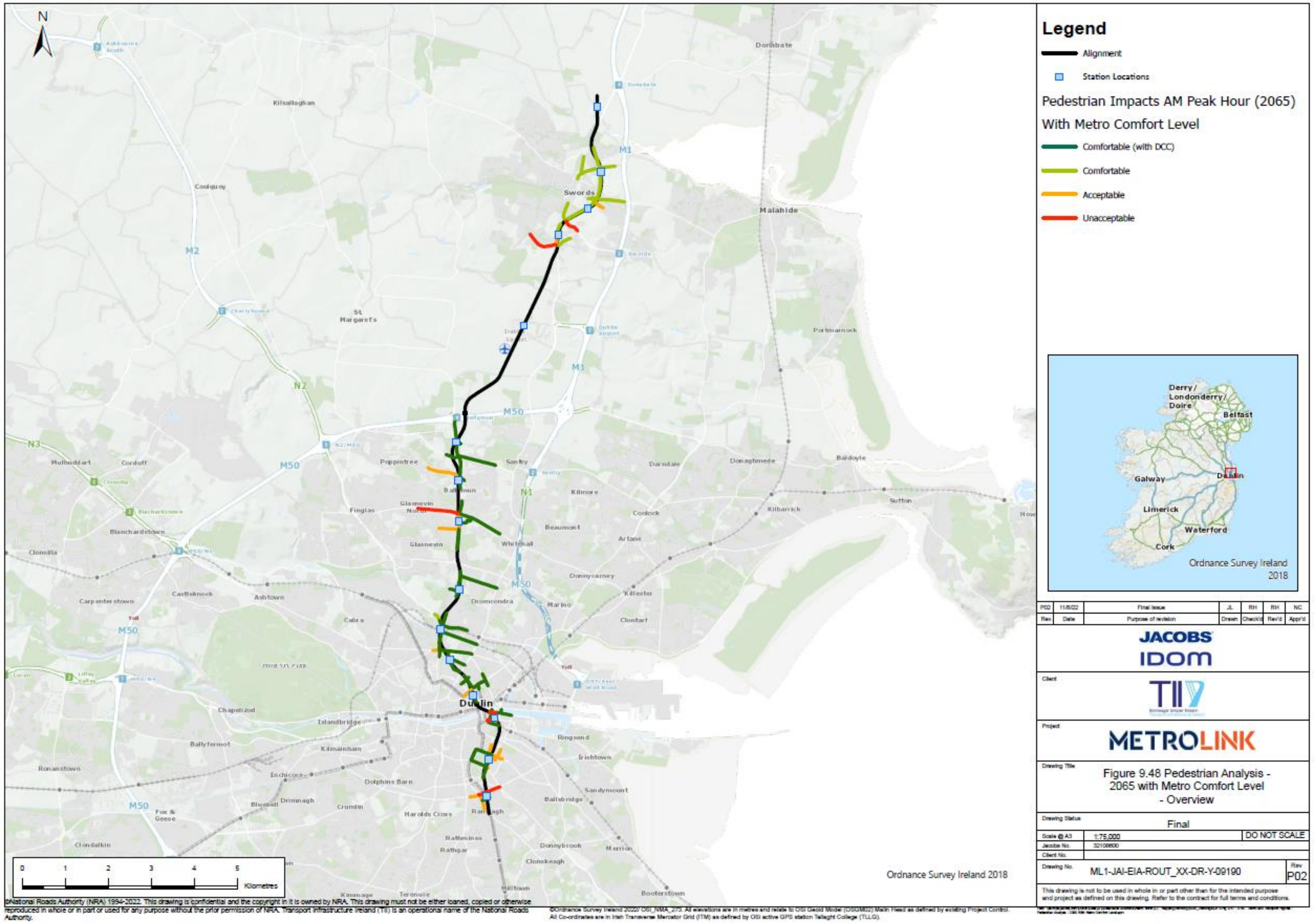

Figure 6.15: Pedestrian Comfort Level (TfL) Along Project Alignment in Scenario A 2065

Table 6.28 presents the links that face Significant impacts (pre mitigation) in the 2065 Scenario A. Links that were identified as 'Uncomfortable' in the static assessment, but 'Acceptable' in the VisWalk assessment have not been included in the table.

A VisWalk model was produced for the area surrounding Dublin Airport station. The modelled layout includes the main roads in Dublin Airport, as well as the associated major signalised junctions and crossings. As well as these aspects, it also includes the numerous crossings within Dublin Airport that connect bus termini and terminals, as well as surrounding areas. The results demonstrate that the network operates with an acceptable level of service in the majority of locations in the Scenario B 2035 AM peak hour. Some delay at specific locations on the network, such as the waiting areas at signalised pedestrian crossings, is likely due to the high pedestrian demand and it is considered that the overall level of service on the network is acceptable. A modelled scenario for 2050 is also under preparation but is not included within this report.

In recognition of the potentially complex routing and road crossing behaviour at Glasnevin station, a VisWalk model was produced for the area surrounding the station. During initial runs of the model, the model experienced saturation on the pedestrian crossing at the southern side of the R108/Whitworth Road junction. Within the model, this crossing has been widened from 2m to 4m in width. Whilst this has not been incorporated into the design at present, it has been confirmed that there is space to accommodate this change in width. This change has been sufficient to stop the model from locking up and it provides adequate capacity to accommodate forecast pedestrian demand in the 2035 and 2050 scenarios. These design changes are being put forward to be implemented in the Opening Year.

The Glasnevin VisWalk microsimulation model indicates that there is sufficient capacity for the transfer of passengers between the Project and DART services. Passengers are able to transfer between the platforms for these services without experiencing congestion or poor levels of service. in general, the network within the DART / Glasnevin station building experiences a Level of Service of B or better. The exception to this is the foot of the escalators in at the Project station, where waiting pedestrians mean that the Level of Service is lower.

The LOS on the network external to the station is also generally at criteria B or better. However, the Level of Service is inevitably lower at the ends of pedestrian crossings as people are required to wait for the relevant green phase in order to cross. This delay to pedestrians is concentrated at the entrances to the crossings and does not impede the operation of the wider network. Analysis of the model indicates that the network operates with an acceptable Level of Service in both the AM and PM peak periods. It was found that no congestion occurred for pedestrians transferring through the overall station footprint due to the dedicated passenger link that is proposed.

At Tara Street, further VisWalk microsimulation indicates that the design for the proposed station is expected to perform with an acceptable Level of Service. The proposed public plaza offers a high level of service regarding pedestrian routing. The north side of Townsend Street experiences relatively high level of pedestrian demand, and therefore the proposed widening of Townsend Street (reducing traffic lanes to one lane only), facilitates improvements to pedestrian congestion and crossings at this location. At Townsend Street, the George's Quay LAP aims to promote Townsend Street 'as priority pedestrian routes providing connectivity between the city centre/retail core and the emerging cultural destination of Grand Canal Dock', and therefore any modifications to this location should be undertaken as a wholistic approach in line with this objective.

At R138 Burgh Quay and George's Quay West, the assessment utilised existing pedestrian infrastructure, and therefore does not account for the proposed upgrade to the public realm at this location as part of the planned mixed-use development at the corner of George's Quay and Tara Street. This impact may be reduced as a result of future developments in the area, in conjunction with the proposed Project proposals to the public realm.

At St Stephen's Green, further VisWalk microsimulation indicates that the network operates with an acceptable level of service in the majority of locations. The level of service is lower at specific locations on the network (Level D and Level E), such the waiting areas at signalised pedestrian crossings and at the entrances to the station escalators. Some delay at these locations is likely due to the high pedestrian demand, and it is considered that the overall level of service on the network is acceptable.

At Grand Parade, the Charlemont VisWalk microsimulation model identified that the current pedestrian facilities are unsuitable and would lead to congestion and a low level of service. The proposed road crossing was moved to Grand Parade, as well as introducing a bi-directional flow staircase to alleviate crowding at the Charlemont Luas stop. With the new pedestrian infrastructure in place, the Vis microsimulation model indicates that R111 Grand Parade will have a Level B Level of Service overall, however at the location of the proposed pedestrian crossing the Level of Service is lower with 'some restriction in selection of walking speed and ability to pass others', this occurs as pedestrians are required to wait for a green phase at the signals. Overall, it is considered that the model displays an acceptable level of network performance in the assessment.

Table 6.28: Pedestrian Links with Significant Impacts

Street Name	Station	DCC Base	TfL Base	DCC with Project	TfL with Project	Microsim LOS	Impact	Description
R125 Pinnockhill	Swords Central	N/A	N/A	N/A	Unacceptable	N/A	Long-term, Significant, Negative	Insufficient Width for expected volume- 1m wide footway on one side of road only
L2300 Boroimhe Road	Fosterstown	N/A	N/A	N/A	Unacceptable	N/A	Long-term, Significant, Negative	Insufficient Width for expected volume on local road- possibility of relocation of space
R103 Glasnevin Avenue	Collins Avenue	No	Comfortable	No	Unacceptable	N/A	Long-term, Significant, Negative	Inappropriately placed bin, large grass verges
Whitworth Road Crossing	Glasnevin	N/A	N/A	N/A	N/A	Uncomfortable, Saturated Crossing at 2m width	Long-term, Significant, Negative	If crossing is widened to 4m, LOS is improved

6.4 Cyclists

A comparison of the Do Minimum and Do Something scenarios for the Opening Year 2035 has been undertaken, to understand the potential changes in cycling trips due to the proposed Project.

The proposed Project will result in some people switching from cycling to public transport for longer distance travel, for example Swords to City Centre, but it will also result in significant number of cycling trips with people cycling to the stations. The reduction in the cycle trips has been obtained by reviewing the 'cycle trips' to/from zones from the ERM model. The new cycle trips to stations have been obtained from an analysis of the active mode trips to the stations and the distance of these from the stations.

Based on the review of the Cycle Trips, a reduction of 3.15% can be seen at selected zones near to the stations over a 12hr period. Table 6.29 below summaries the main differences between the Do Minimum and Do Something scenarios for the year 2035.

Table 6.29: Change in Cycle Trips Do Minimum to Do Something 2035

Scenario - Y2035	Number of trips
Do Minimum	127,414
Do Something	123,403
Difference DM-DS	-4,011
% Difference DM-DS	-3.15%

Figure 6.16 illustrates the percentage difference in cycle trips to/from zones due to the Project. There are reductions of up to 20% in the zones in the Swords area, particularly in the zones to the east of the alignment. Between the M50 and Dublin City Centre, many of the zones see reductions of up to 2.5% in the total number of cycle trips, however zones around Northwood Station see reductions of up to 20%.

Dublin City Centre sees increases in cycle trips in zones in proximity to O'Connell Street and Tara Station. South of the alignment, there are reductions of up to 30% in total cycle trips, as the presence of the Project at Charlemont Station provides an interchange opportunity with the Luas Green Line towards Sandyford.

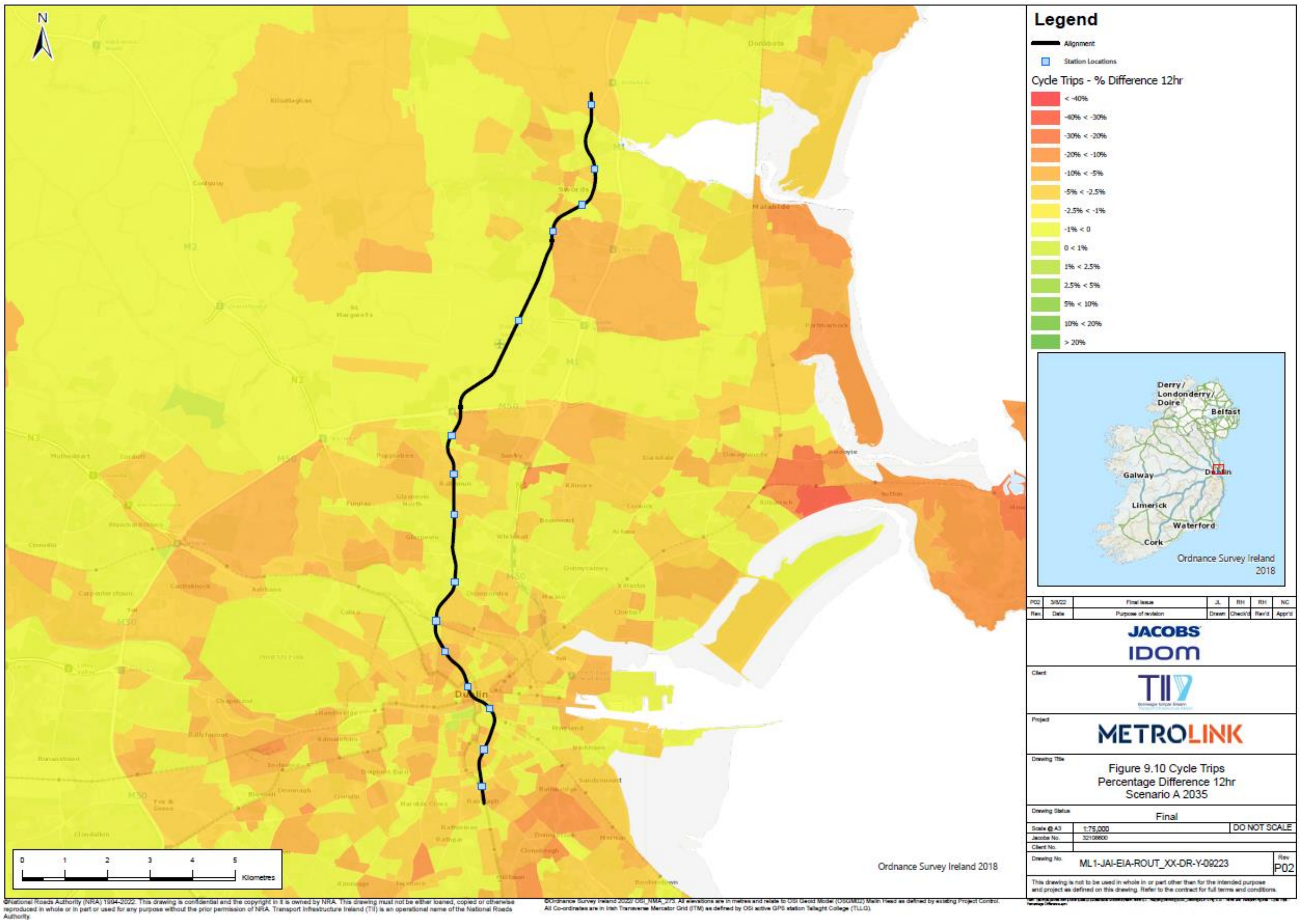

Figure 6.16: 2035 Cycle Trips – Total Trips % Difference 12hr

The proposed Project will produce significant number of new cycling trips as people from the catchment areas use cycling to get to/from the stations. The modelling output provides a total number of people that will access the stations by either walking or cycling. These numbers and the origins and destination of passengers have been analysed to estimate a likely number of future cycle trips to the proposed Project.

In total, an increase of approximately 165,000 active mode trips is estimated for trips to and from the stations over the 12hr period.

Table 6.30: Active Modes Summary 2035 (All Zones)

Do Something 2035	Number of trips
Trips Produced	81,603
Trips Attracted	83,299
Total Trips	164,901

Figure 6.17 and Figure 6.18 illustrate the 2035 total active mode trips produced during the 12hr period. Similar to the difference in cycle trips, the northern section of the alignment produces and attracts greater numbers of active mode trips over the 12hr period.

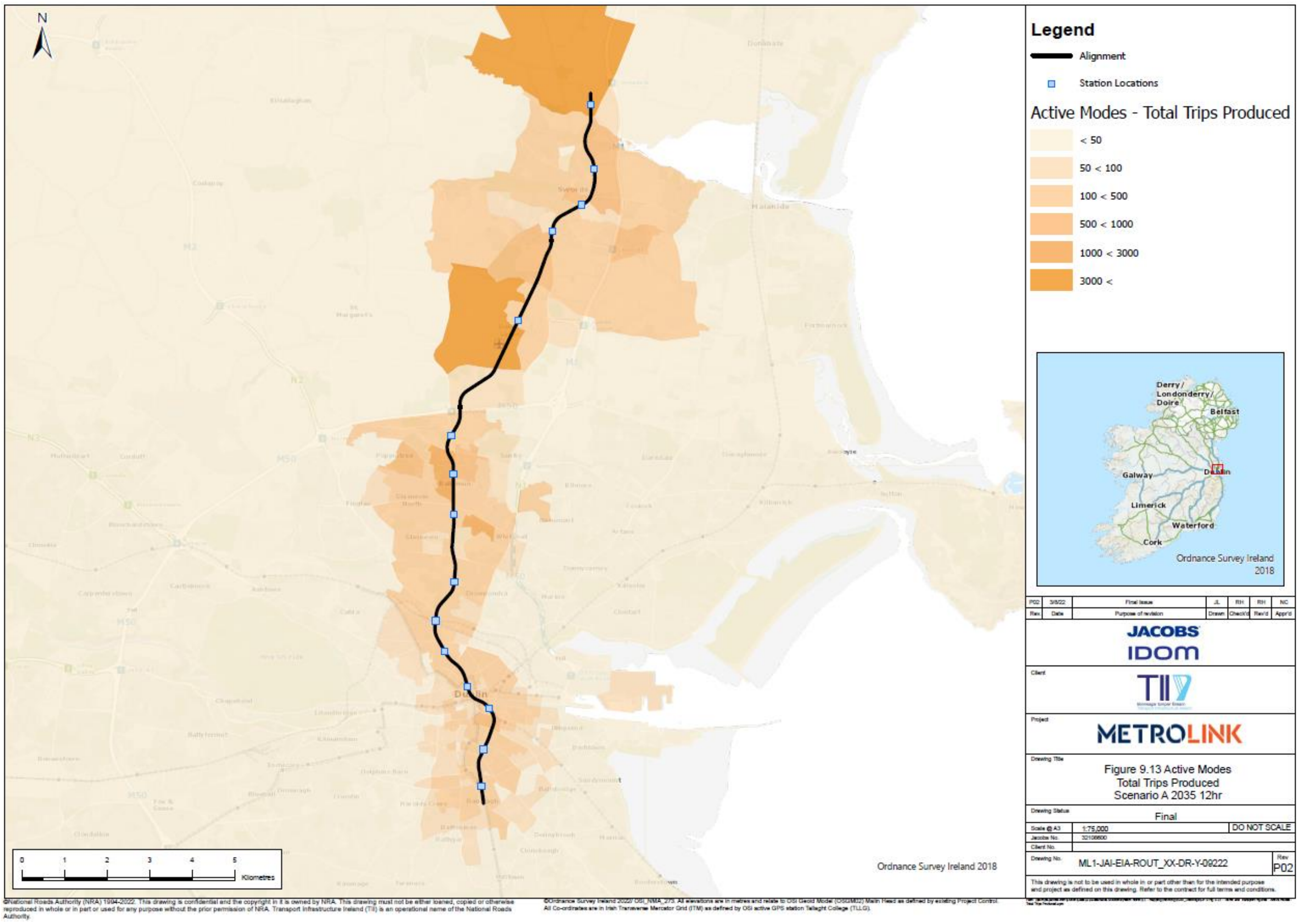

Figure 6.17: Active Modes Trips – Total Trips Produced 12hrs

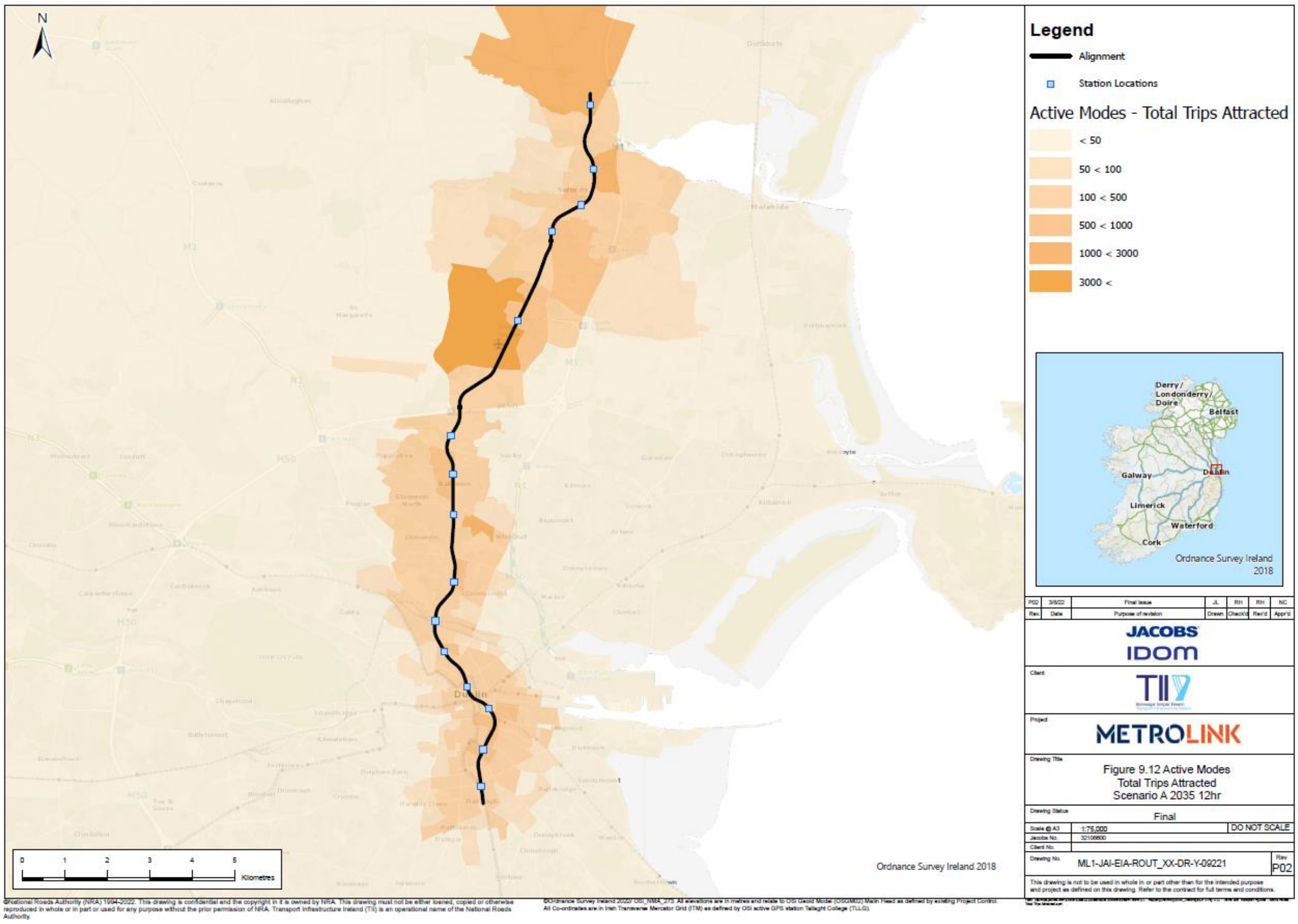

Figure 6.18: 2035 Active Modes Trips – Total Trips Attracted - 12hr

The potential cycle demand per station has been presented in section 2.9.1, along with the proposed provisions as part of the proposed Project. The proposed Project make a number of improvements to cycling infrastructure around the proposed stations, generally leading to a positive impact on the level of Quality of Service along the alignment.

6.5 Road Safety Audit

A Stage 1 Road Safety Audit has been undertaken for all of the proposed highway works for the Project.

7. Mitigation Measures

7.1 Construction Phase

While there will inevitably be additional vehicular traffic during the Construction Phase of the proposed Project, this will be managed through the outline Construction Environmental Management Plan (CEMP) and TTM Plans for the proposed Project and stations. The Outline CEMP provides a framework to:

- Describe the programme for environmental management during construction;
- Implement those monitoring and mitigation measures identified in the EIAR;
- Outline the principles and minimum standards required of the contractor during the development of the detailed CEMP (and associated Method Statements) and throughout construction;
- Identify the relevant roles and responsibilities for developing, implementing, maintaining and monitoring environmental management; and
- Outline the procedures for communicating and reporting on environmental aspects of the proposed development throughout construction.

The CEMP contains details of HGV management and control measures, such as safety measures that should be on HGVS. In the event of approval being granted for the proposed Project and prior to commencement of works, the appointed contractor(s) which will be appointed by TII, will prepare a final CEMP. Each Contractor will be required to have their own CEMP.

The Outline CEMP will be a key part of the construction contract to ensure that all mitigation measures, which are considered necessary to protect the environment, prior to construction and during construction of the proposed Project, are fulfilled.

The Traffic Management proposals have been developed to minimize construction impacts on pedestrians, cyclists and on the operation of bus services based on the principles of the road user hierarchy. (For example, where a lane is lost on a carriageway with a bus lane and two traffic lanes, the aim will be where possible, to maintain the bus lane for buses and cyclists and reduce the number of traffic lanes).

7.1.1 Mobility Management Plan

A Construction Sustainable Mobility Plan has been prepared to support and promote sustainable travel for construction staff travelling to and from the proposed Project site. The mobility plan is a management tool designed to encourage construction staff to rethink their travel choices and requirements during construction in order to minimize the adverse impacts on the environment and on the operation of the transport network within the city.

The Construction Sustainable Mobility Plan will be an active document that will require to be updated on a regular basis as construction activities take place and will present a series of measures designed to encourage travel to the constructions site(s) in a sustainable way.

7.1.2 Scheme Traffic Management Plan

The STMP (Appendix A9.5) details mitigation techniques and the types of measures to be employed to minimise the impacts generated by the proposed Project during the Construction Phase. The extent of the mitigation will be dependent on the severity of the impact. In some cases, mitigation may not be possible, and the impact will be described as residual.

There are two established strategies for impact mitigation which are used for the assessment in the STMP, namely reduction and remedial measures.

In general, strategic reduction mitigation occurs before construction, while remedial measures are implemented during construction on an on-going basis.

The reduction measures proposed, among others, include:

- A coordinated City Centre Traffic Management Plan, for all Project stations;
- Establishment of a Project Construction Traffic Forum- with representatives from key stakeholders;
- Construction vehicles will be controlled in terms of the hours of operation, and by imposing restriction on vehicle size and weight;
- Where practicable, construction work requiring short term disruption and road closures will be carried out when traffic volumes are lower, such as:
    - At night;
    - At weekends; and
    - During school holidays.

The remedial measures proposed, among others, include:

- Wheel wash facilities will be provided at site specific locations if required;
- The numbers of employee vehicles travelling to and from construction sites on a daily basis will be managed through:
    - Car sharing; and
    - Transporting workers to site via min-buses from designated collection points (such as Luas and DART stations or other appropriate locations).

7.1.3 Construction Phase Monitoring

Throughout the Construction Phase, ongoing monitoring will be required of the specified HGV haul routes, particularly in relation to those affected by the HGV Restricted Zone within Dublin City Centre.

Monitoring of hours of operation and vehicle size and weight will also be required.

7.2 Operational Phase

It is anticipated that, overall, the proposed Project will provide for improvements to the public transport network, resulting in decreases in private car usage/trips (with the exception of trips being made to and from the Park and Ride Facility), increases in public transport usages, and will facilitate walking and cycling to the stations, without significantly impacting on the operation of the networks in the area. There may be a requirement for further work in conjunction with FCC and DCC to determine full effective mitigation measures, such as reconfiguration of street furniture or reallocation of space to maximise available width where there are Significant negative impacts to pedestrian comfort levels.

At Fosterstown Station, the current width of the footway (total across both sides of the road) on L2300 Boroimhe Road is insufficient for the maximum expected volume of pedestrians at this location. However, with reallocation of the current grass verges at this location would allow for an increase of total footway width to 4m, which would give an 'Acceptable' pedestrian comfort level.

Similarly, at Collins Avenue Station, following reconfiguration of the existing street furniture, the pedestrian comfort level improves to an ‘Acceptable’ rating.

Improvements to pedestrian infrastructure have also been proposed at Glasnevin where VisWalk assessment has identified congestion at the Whitworth Road crossing.

7.2.1 Operational Phase Monitoring

The use of the Park and Ride Facility at Estuary Station will need to be monitored through the Operational Phase. Data on the origins and destinations of users, and their trips will be required to determine what impact the Park and Ride Facility is having on local and strategic level trips. Further demand management measures may be required in order to increase the number of spaces available to the wider catchment.

The cycle parking provisions per station will be required to be monitored to ensure that the level of provisions is meeting the demand. Similarly, the type of cycle parking provisions required may change over the course of the Operational Phase due to the ongoing shift to shared and micro mobility solutions.

Pedestrian comfort levels will be required to be monitored throughout the Operational Phase to ensure that the surrounding footways have the capacity to maintain acceptable comfort levels with increasing demand. ‘Uncomfortable’ and ‘Acceptable’ links identified in the assessment are to be monitored to ensure that maximum available width is provided through the monitoring of street furniture placement and total footpath width, where applicable.

8. Summary

The proposed Project's objectives have been framed within the relevant national, regional and local policy guidance to ensure consistency with overarching economic, social and environmental objectives.

The most significant positive impacts will be on the public transport network, which will see increases in public transport mode share along the alignment, will increase its interchange opportunities at Glasnevin, Tara Street and Charlemont, and will present positive impacts on public transport journey times to and from key locations such as Swords, Dublin Airport and Glasnevin.

In 2065, the total passenger km travelled by Public Transport over the AM period increases by over 518,000 when the proposed Project is in place in both Scenario A and Scenario B. The largest journey time saving occurs from Swords Pavilions to Glasnevin, with a saving of approximately 40 minutes in all three years in Scenario A, equating to a reduction of 58% from the Do Minimum scenario. Similarly, the introduction of the proposed Project will cause reductions in bus usage, particularly along the R108 corridor, R132 corridor, and the Port Tunnel.

In the Operational phase, the proposed Project will have a significant positive impact on modal splits along the alignment, with a reduction in road mode share per zone, alongside a rise in public transport (including the proposed Project) mode share. This is particularly seen at Dublin Airport, where a modal shift from road to public transport can be seen for both flyers and workers (offices and terminals). For flyers in 2065, Total PT mode share increases from 59% in the Do Minimum scenario, to 66% in the Do Something scenario. The Project accounts for 59% of total mode share in this scenario. Car mode share sees the largest reduction in 2065, reducing from 41% in the Do Minimum scenario, to 33% in the Do Something. For Workers in 2065, Total PT mode share increases from 30% in the Do Minimum scenario, to 42% in the Do Something scenario, with the Project accounting for 34% of total mode share. Car mode share has the largest percentage point reduction in 2050, reducing from 73% to 60%.

Notable reductions in traffic flow will be seen along key routes such as the M1 and the R132 Swords Bypass as a result of the impact of the Park and Ride facility. Reductions can also be seen south of Dublin Airport, including along the M50, and along most radial routes into Dublin City Centre.

Similarly, in both Scenario A and Scenario B, a reduction can be seen in the road distance travelled in the AM and PM periods when comparing the Do Minimum and Do Something scenarios, with the highest reduction of 3.7% in 2065 in Scenario A PM Peak Period.

With the increase in active modes trips in the Operational Phase of the proposed Project, 3 pedestrian links along the alignment are deemed to have an 'Unacceptable' comfort level, excluding those identified as 'Uncomfortable' in the static analysis but 'Acceptable' in the VisWalk analysis. There will also be an additional 164,901 cycle trips on the network when the Project is in place.

References

Climate Action and Low Carbon Development Act 2015 (Department of Communications, Climate Action and Environment, 2015)

Dardistown Local Area Plan (Fingal County Council, 2013)

Design Manual for Urban Roads and Streets (DTTAS, 2013)

Draft Dublin City Development Plan 2022-2028 (Dublin City Council, 2022)

Draft Fingal County Council Development Plan 2023-2029 (Fingal County Council, 2022)

Draft Transport Strategy for the Greater Dublin Area 2022-2042 (National Transport Authority, 2022)

Dublin Airport Local Area Plan (Fingal County Council, 2020)

Dublin Airport Central Masterplan (Fingal County Council, 2016)

Dublin City Council Development Plan (2016 – 2022) (Dublin City Council, 2016)

Dublin City Local Economic and Community Plan 2016 – 2021 (DCLECP) (Dublin City Council, 2016)

Fingal County Council Development Plan (2017 – 2023) (Fingal County Council, 2017)

Grangegorman Strategic Development Zone Planning Scheme (Dublin City Council, 2012)

The Heart of Dublin- City Centre Public Realm Masterplan (Dublin City Council, 2016)

Investing in our Transport Future: Strategic Investment Framework for Land Transport, (DTTaS 2015)

Luas Data, Transport Omnibus 2018 – Public Transport, Available at: www.cso.ie

M50 Demand Management Report (National Roads Authority, Dun Laoghaire Rathdown County Council, Dublin City Council, South Dublin County Council and Fingal County Council, 2014)

National Development Plan 2018 – 2027 (Department of Public Expenditure and Reform, 2018)

National Development Plan 2021-2030 (Department of Public Expenditure and Reform, 2021)

National Heavy Rail Census Report 2018 (National Transport Authority, 2019)

National Planning Framework 2040 (Department of Housing, Planning, Community and Local Government, 2018)

National Sustainable Mobility Policy (Department of Transport, 2022)

Pedestrian Comfort Guidance for London- Pedestrian Comfort Assessment, (Transport for London, 2019)

Regional Planning Guidelines for the Greater Dublin Area 2010-2022 (The Regional Planning Guidelines Office, 2010)

Regional Spatial and Economic Strategy for the Eastern and Midland Regional (RSES) (Eastern and Midland Regional Assembly, 2019)

Review of Future Capacity Needs at Ireland's State Airports– Final Report for the Department of Transport Tourism and Sport (Oxford Economics, 2018)

South Fingal Fringe Study (Fingal County Council, 2004)

Swords Masterplans Draft Masterplans for Barrysparks & Crowscastle; Fosterstown; & Estuary West (Fingal County Council, 2019)

Traffic Modelling Plan (ML1-JAI-TRA-ROUT_XX-PL-Y-00001)

Transport Infrastructure Ireland Traffic and Transport Assessment Guidelines (Transport Infrastructure Ireland, 2014)

Transport Strategy for the Greater Dublin Area 2016 – 2035 (National Transport Authority, 2016)

Your Swords: An Emerging City, Strategic Vision 2035 (Fingal County Council, 2008)

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Appendix A. Boarding and Alighting Passengers

Scenario A 2035 Northbound Direction												
Station	AM			LT			SR			PM		
Station	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load
Charlemont	1742	0	1742	902	0	902	1026	0	1026	2294	0	2294
St Stephen's Green	647	11	2378	666	4	1564	916	2	1940	2201	1	4494
Tara	1461	180	3659	930	78	2416	1165	80	3024	2472	329	6637
O'Connell Street	1000	37	4621	594	14	2997	721	15	3731	1330	43	7924
Mater	375	136	4860	252	55	3194	270	72	3929	457	173	8208
Glasnevin	678	212	5327	158	94	3259	142	136	3934	319	744	7783
Griffith Park	62	260	5129	36	60	3235	88	68	3954	145	236	7691
Collins Avenue	221	661	4689	126	202	3160	290	266	3977	480	902	7269
Ballymun	237	481	4445	115	278	2996	84	471	3590	126	1548	5847
Northwood	110	209	4347	40	88	2948	31	123	3499	70	324	5593
Dardistown and M50	0	0	4347	0	0	2948	0	0	3499	0	0	5593
Dublin Airport	61	3287	1121	101	1994	1056	165	1866	1798	534	1663	4465
Fosterstown	22	328	815	15	235	835	20	460	1358	51	1126	3390
Swords Central	21	310	526	24	267	591	36	411	983	144	1074	2460
Seatown	4	378	151	13	197	407	37	240	781	185	640	2006
Estuary Park-and-Ride	0	151	0	0	407	0	0	781	0	0	2006	0
Southbound Direction												
Estuary Park-and-Ride	2433	0	2433	433	0	433	537	0	537	603	0	603
Seatown	969	166	3236	170	10	593	159	42	654	288	47	844
Swords Central	1276	160	4352	292	16	870	217	26	845	302	33	1112
Fosterstown	1959	53	6259	313	15	1167	208	21	1032	315	27	1400
Dublin Airport	1842	771	7330	2294	75	3387	2641	78	3595	2542	147	3795
Dardistown and M50	0	0	7330	0	0	3387	0	0	3595	0	0	3795
Northwood	578	86	7822	119	40	3465	84	49	3629	161	79	3877
Ballymun	1885	161	9546	411	101	3776	282	129	3783	392	211	4059
Collins Avenue	1128	718	9956	246	249	3772	237	206	3814	394	223	4230
Griffith Park	292	235	10013	61	60	3773	79	46	3847	149	67	4312
Glasnevin	1176	319	10870	133	138	3768	95	147	3796	204	469	4047
Mater	274	544	10601	73	254	3587	51	217	3630	163	226	3984
O'Connell Street	86	1452	9235	19	623	2983	18	683	2965	56	668	3372
Tara	193	3841	5587	52	1344	1691	48	1383	1629	107	1525	1954
St Stephen's Green	1	2981	2607	2	664	1028	3	595	1037	8	657	1304
Charlemont	0	2607	0	0	1028	0	0	1037	0	0	1304	0
Scenario A 2050 Northbound Direction												
Station	AM			LT			SR			PM		
Station	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load

Charlemont	2020	0	2020	1189	0	1189	1285	0	1285	2775	0	2775
St Stephen's Green	737	13	2744	874	4	2059	1030	2	2313	2607	1	5381
Tara	1853	213	4384	1379	93	3346	1464	93	3685	3059	371	8069
O'Connell Street	1296	42	5638	888	16	4218	943	17	4610	1667	47	9690
Mater	452	144	5946	345	65	4497	372	77	4906	551	184	10057
Glasnevin	944	222	6669	239	123	4613	209	158	4956	452	896	9612
Griffith Park	79	278	6469	50	73	4591	111	77	4991	167	257	9523
Collins Avenue	282	692	6059	169	226	4534	355	294	5052	550	981	9092
Ballymun	337	533	5863	165	350	4349	118	592	4577	164	1913	7343
Northwood	162	231	5795	62	109	4302	44	157	4464	94	415	7022
Dardistown and M50	0	0	5795	0	0	4302	0	0	4464	0	0	7022
Dublin Airport	132	4536	1390	211	3046	1467	274	2728	2011	787	2324	5485
Fosterstown	36	398	1028	28	290	1205	17	592	1436	61	1375	4170
Swords Central	27	421	634	40	370	875	31	544	923	232	1352	3049
Seatown	4	474	165	27	252	650	24	316	631	247	797	2500
Estuary Park-and-Ride	0	165	0	0	650	0	0	631	0	0	2500	0
Southbound Direction												
Estuary Park-and-Ride	2307	0	2307	959	0	959	391	0	391	772	0	772
Seatown	1219	186	3341	217	43	1133	202	35	559	346	58	1060
Swords Central	1600	220	4721	386	45	1474	282	25	816	400	47	1413
Fosterstown	2388	51	7058	390	36	1828	255	19	1052	374	38	1749
Dublin Airport	2649	1041	8666	3533	155	5206	3954	113	4892	3515	225	5039
Dardistown and M50	0	0	8666	0	0	5206	0	0	4892	0	0	5039
Northwood	734	110	9290	162	64	5304	108	78	4922	195	116	5118
Ballymun	2355	199	11446	535	157	5682	353	196	5079	459	298	5279
Collins Avenue	1230	831	11845	279	374	5587	256	322	5013	409	287	5401
Griffith Park	317	273	11889	71	84	5574	88	60	5042	158	84	5475
Glasnevin	1404	431	12862	163	231	5505	116	219	4938	235	656	5054
Mater	312	656	12519	81	375	5211	57	293	4702	170	262	4962
O'Connell Street	113	1739	10892	23	942	4292	21	921	3801	63	875	4149
Tara	243	4621	6514	62	2046	2309	59	1853	2007	123	1960	2312
St Stephen's Green	1	3377	3138	2	942	1369	3	686	1324	9	769	1552
Charlemont	0	3138	0	0	1369	0	0	1324	0	0	1552	0

Scenario A 2065 Northbound Direction												
Station	**AM**			**LT**			**SR**			**PM**		
Station	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load
Charlemont	2393	0	2393	1443	0	1443	1653	0	1653	3402	0	3402
St Stephen's Green	832	18	3208	935	6	2372	1230	3	2880	3118	1	6518
Tara	2287	288	5207	1683	123	3932	2035	120	4795	3872	457	9933

O'Connell Street	1585	65	6727	1151	24	5059	1327	26	6097	2116	66	11982
Mater	531	172	7086	442	85	5416	542	88	6551	655	213	12424
Glasnevin	1282	251	8117	330	147	5599	327	205	6672	585	1171	11838
Griffith Park	100	308	7910	65	85	5579	148	92	6728	192	291	11738
Collins Avenue	356	747	7518	221	261	5539	448	338	6838	582	1099	11222
Ballymun	455	610	7364	226	436	5328	199	751	6286	222	2326	9118
Northwood	229	270	7322	86	137	5278	76	207	6155	126	524	8720
Dardistown and M50	0	0	7322	0	0	5278	0	0	6155	0	0	8720
Dublin Airport	211	5770	1763	298	4131	1444	332	4212	2276	1001	3066	6655
Fosterstown	59	494	1328	16	356	1104	13	758	1532	67	1633	5089
Swords Central	36	592	773	28	471	661	16	680	868	315	1649	3755
Seatown	6	585	194	11	321	351	7	402	473	275	1002	3028
Estuary Park-and-Ride	0	194	0	0	351	0	0	473	0	0	3028	0
Southbound Direction												
Estuary Park-and-Ride	2342	0	2342	336	0	336	552	0	552	1134	0	1134
Seatown	1593	197	3737	274	6	605	272	42	781	430	76	1488
Swords Central	1890	285	5342	494	16	1083	401	35	1147	562	75	1974
Fosterstown	2740	52	8030	478	18	1542	331	23	1455	463	55	2382
Dublin Airport	3366	1222	10174	4569	177	5934	4955	257	6153	4500	361	6522
Dardistown and M50	0	0	10174	0	0	5934	0	0	6153	0	0	6522
Northwood	933	139	10968	208	83	6059	138	104	6186	241	162	6601
Ballymun	2894	248	13614	693	207	6545	448	255	6379	565	404	6762
Collins Avenue	1366	876	14103	327	455	6417	288	389	6278	449	319	6893
Griffith Park	358	314	14147	84	98	6404	100	74	6304	173	101	6965
Glasnevin	1795	556	15386	206	293	6317	143	289	6158	274	915	6324
Mater	342	792	14936	102	455	5963	70	352	5876	195	317	6203
O'Connell Street	148	2105	12979	30	1125	4868	27	1183	4720	82	1160	5124
Tara	322	5512	7789	89	2413	2544	79	2366	2433	171	2491	2805
St Stephen's Green	1	3987	3803	3	921	1626	5	828	1610	12	932	1884
Charlemont	0	3803	0	0	1626	0	0	1610	0	0	1884	0

Scenario B 2035 Northbound Direction												
Station	**AM**			**LT**			**SR**			**PM**		
Station	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load
Charlemont	1911	0	1911	914	0	914	1086	0	1086	2426	0	2426
St Stephen's Green	683	12	2582	728	4	1638	1079	3	2162	2261	1	4686
Tara	1258	258	3582	877	86	2429	1125	98	3189	1934	409	6210
O'Connell Street	798	54	4326	526	18	2936	674	20	3843	1147	56	7301
Mater	260	134	4451	198	45	3089	226	57	4012	386	160	7526
Glasnevin	1171	256	5366	367	106	3350	338	217	4133	532	906	7153

Griffith Park	56	228	5193	35	60	3325	82	70	4146	129	216	7066
Collins Avenue	204	632	4765	132	203	3254	271	258	4158	459	817	6708
Ballymun	214	473	4506	105	266	3093	74	462	3770	109	1416	5401
Northwood	106	223	4389	39	87	3045	30	126	3675	69	337	5133
Dardistown and M50	0	0	4389	0	0	3045	0	0	3675	0	0	5133
Dublin Airport	75	3318	1145	129	2066	1108	219	1874	2019	336	1672	3798
Fosterstown	29	380	794	22	274	856	35	545	1509	35	1413	2419
Swords Central	19	318	495	30	257	629	56	377	1188	73	944	1549
Seatown	3	392	106	17	196	450	55	239	1004	99	616	1031
Estuary Park-and-Ride	0	106	0	0	450	0	0	1004	0	0	1031	0
Southbound Direction												
Estuary Park-and-Ride	1667	0	1667	673	0	673	470	0	470	313	0	313
Seatown	1037	118	2587	162	28	808	163	28	605	300	23	590
Swords Central	1162	109	3640	253	31	1030	206	21	789	309	20	879
Fosterstown	2087	40	5686	320	28	1322	243	17	1015	350	25	1204
Dublin Airport	2004	553	7137	2536	84	3774	2831	63	3783	2484	89	3599
Dardistown and M50	0	0	7137	0	0	3774	0	0	3783	0	0	3599
Northwood	545	82	7600	105	44	3835	82	51	3814	171	68	3701
Ballymun	1870	135	9335	386	101	4121	290	124	3980	407	172	3936
Collins Avenue	1113	681	9768	236	252	4105	257	197	4040	509	160	4284
Griffith Park	229	213	9784	47	65	4087	65	49	4057	116	60	4341
Glasnevin	942	680	10046	128	436	3778	107	522	3642	212	945	3608
Mater	181	477	9750	55	206	3627	43	191	3494	130	258	3480
O'Connell Street	99	1282	8567	19	609	3037	18	596	2916	61	495	3046
Tara	178	3189	5556	39	1252	1824	47	1204	1759	100	1203	1943
St Stephen's Green	1	2758	2799	2	737	1088	5	626	1137	13	579	1377
Charlemont	0	2799	0	0	1088	0	0	1137	0	0	1377	0

Scenario B 2050 Northbound Direction												
Station	**AM**			**LT**			**SR**			**PM**		
Station	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load
Charlemont	2026	0	2026	1237	0	1237	1312	0	1312	2259	0	2259
St Stephen's Green	855	11	2869	916	4	2150	999	2	2309	2142	1	4400
Tara	1712	190	4391	1516	64	3602	1483	71	3721	2596	224	6771
O'Connell Street	1301	48	5644	800	16	4385	825	17	4528	1548	45	8274
Mater	353	112	5885	286	44	4628	306	46	4787	512	120	8667
Glasnevin	1038	131	6792	406	67	4966	358	98	5048	408	351	8724
Griffith Park	64	231	6625	45	59	4953	94	63	5079	144	195	8674
Collins Avenue	259	561	6324	221	174	4999	387	198	5268	543	645	8572
Ballymun	305	400	6229	183	300	4882	123	488	4903	160	1511	7221

Northwood	153	233	6149	75	104	4853	53	145	4810	103	368	6956
Dardistown and M50	0	0	6149	0	0	4853	0	0	4810	0	0	6956
Dublin Airport	159	4883	1425	227	3759	1322	308	3300	1818	1016	2327	5644
Fosterstown	45	442	1027	28	341	1010	17	670	1165	86	1710	4020
Swords Central	24	468	583	34	340	704	24	508	681	301	1234	3088
Seatown	2	496	89	19	252	470	13	315	379	204	789	2502
Estuary Park-and-Ride	0	89	0	0	470	0	0	379	0	0	2502	0
Southbound Direction												
Estuary Park-and-Ride	1803	0	1803	1046	0	1046	469	0	469	847	0	847
Seatown	1362	83	3082	233	52	1227	226	44	651	376	60	1164
Swords Central	1584	210	4456	398	69	1556	307	38	921	453	57	1559
Fosterstown	2708	49	7115	417	40	1933	299	19	1201	421	48	1932
Dublin Airport	2798	1054	8860	3782	325	5390	4143	221	5123	3849	296	5486
Dardistown and M50	0	0	8860	0	0	5390	0	0	5123	0	0	5486
Northwood	556	121	9295	138	70	5458	102	78	5147	193	103	5575
Ballymun	2063	199	11159	455	157	5756	327	184	5290	432	272	5736
Collins Avenue	941	850	11251	197	338	5615	215	233	5272	385	207	5913
Griffith Park	214	265	11200	48	59	5604	72	47	5297	122	68	5967
Glasnevin	373	598	10976	65	412	5257	55	471	4881	94	1011	5049
Mater	145	629	10492	51	288	5019	41	228	4693	110	280	4880
O'Connell Street	91	1662	8921	18	870	4167	17	808	3902	50	866	4065
Tara	77	3715	5283	37	1893	2311	39	1772	2168	77	1874	2268
St Stephen's Green	2	2491	2795	2	904	1409	4	735	1438	11	606	1673
Charlemont	0	2795	0	0	1409	0	0	1438	0	0	1673	0

Scenario B 2065 Northbound Direction												
Station	**AM**			**LT**			**SR**			**PM**		
Station	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load
Charlemont	2283	0	2283	1419	0	1419	1589	0	1589	2547	0	2547
St Stephen's Green	816	12	3087	1060	4	2474	1270	3	2856	2227	1	4773
Tara	2259	222	5124	1818	81	4212	2004	86	4774	2921	251	7443
O'Connell Street	1264	52	6336	946	19	5139	1089	19	5843	1670	49	9064
Mater	389	124	6601	327	51	5415	391	50	6184	571	130	9505
Glasnevin	1296	137	7760	466	75	5807	469	103	6550	523	413	9616
Griffith Park	75	235	7600	50	65	5791	109	66	6593	163	202	9576
Collins Avenue	308	583	7326	213	189	5815	445	214	6824	604	688	9491
Ballymun	405	441	7290	213	359	5670	177	592	6409	206	1802	7895
Northwood	208	254	7244	86	125	5630	80	179	6309	135	453	7577
Dardistown and M50	0	0	7244	0	0	5630	0	0	6309	0	0	7577

Dublin Airport	254	5820	1678	372	4322	1680	543	4164	2688	564	2933	5208
Fosterstown	64	524	1219	28	417	1290	22	835	1875	24	2126	3106
Swords Central	32	561	690	45	461	874	59	620	1314	36	1445	1697
Seatown	3	550	143	18	309	584	32	391	956	14	994	717
Estuary Park-and-Ride	0	143	0	0	583	0	0	956	0	0	717	0
Southbound Direction												
Estuary Park-and-Ride	2320	0	2320	655	0	655	228	0	228	131	0	131
Seatown	1601	58	3863	262	17	900	257	4	480	403	2	532
Swords Central	2072	108	5827	441	32	1309	359	14	825	531	22	1041
Fosterstown	3129	35	8920	487	28	1769	346	15	1157	469	43	1467
Dublin Airport	3432	1118	11235	4798	188	6379	5217	174	6200	4636	121	5982
Dardistown and M50	0	0	11235	0	0	6379	0	0	6200	0	0	5982
Northwood	687	156	11766	171	88	6462	127	100	6227	223	135	6070
Ballymun	2474	248	13992	566	191	6837	387	231	6382	488	338	6220
Collins Avenue	970	940	14022	212	386	6664	220	258	6344	378	233	6364
Griffith Park	218	289	13951	52	66	6649	75	52	6366	123	72	6415
Glasnevin	434	748	13637	74	504	6219	60	598	5828	102	1092	5424
Mater	156	759	13034	57	354	5922	44	272	5600	117	305	5236
O'Connell Street	98	2046	11086	22	1024	4920	19	961	4658	56	949	4343
Tara	83	4911	6258	46	2346	2620	46	2200	2504	88	2040	2391
St Stephen's Green	3	2962	3298	2	972	1650	4	827	1681	12	567	1836
Charlemont	0	3298	0	0	1650	0	0	1681	0	0	1836	0

Appendix B. Accessibility Plots

The following plots illustrate the journey time savings on public transport to and from a number of destinations, such as Dublin City University (DCU), Swords, and the City Centre, indicating areas that are newly accessible by public transport within 45minutes when the Project is in place. This data is utilising Base 2019 data from the NTA Planning Datasheets.

Figure 8.1 and Figure 8.2 illustrate the differences in public transport journey times in the morning peak, to and from DCU with and without the Project in place. Dublin City University (DCU) is located in close proximity to the proposed Collins Avenue station. Due to the nature of student travel, public transport is the primary mode of transport. It shows that with the proposed Project in place, the 45minute catchment extends further south, to areas currently inaccessible in that time. Similarly, newly accessible areas within 45minutes of DCU can be seen to the north-east towards Balbriggan. Savings of between 10 and 20 minutes can be seen to the south-east, along the R147 towards the M3.

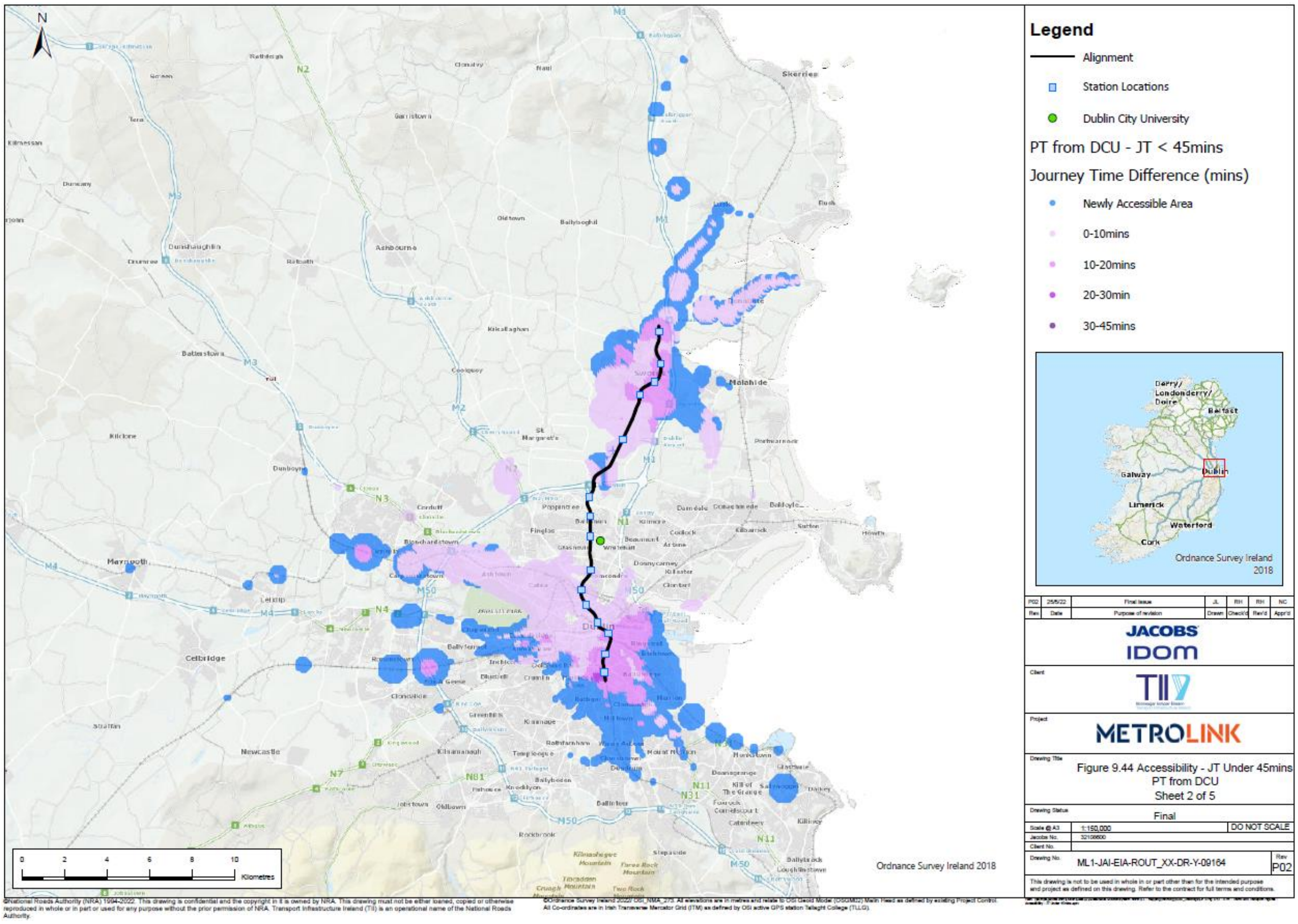

Figure 8.1: Differences in Public Transport Journey Times in the morning peak from Dublin City University

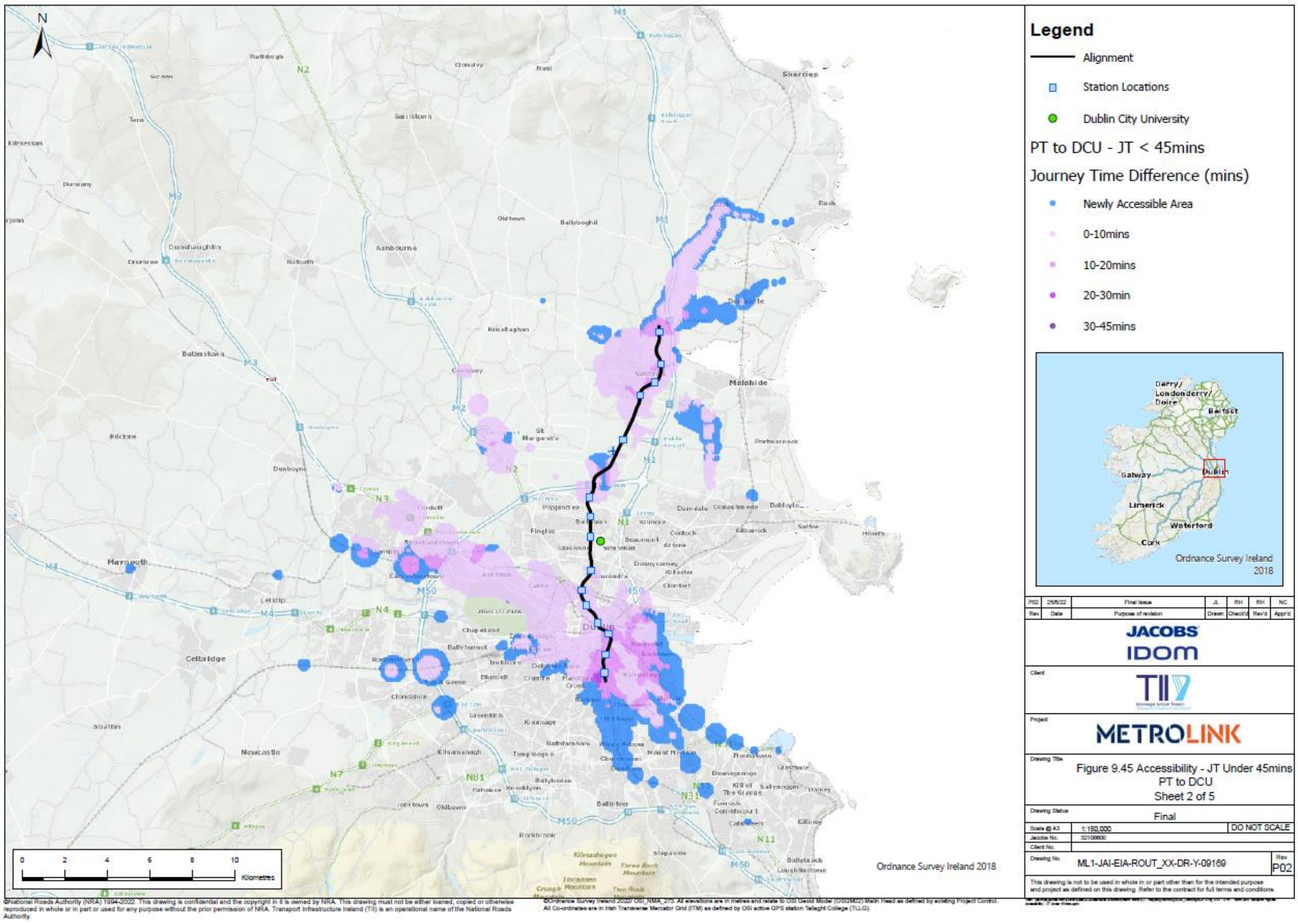

Figure 8.2: Differences in Public Transport Journey Times in the morning peak to Dublin City University

Figure 8.3 and Figure 8.4 illustrate the differences in journey times by public transport to and from East Swords, a largely commercial area offering employment. Ballymun, Glasnevin and Drumcondra, which are areas of high population, are areas which are newly accessible to East Swords by public transport in 45minutes.

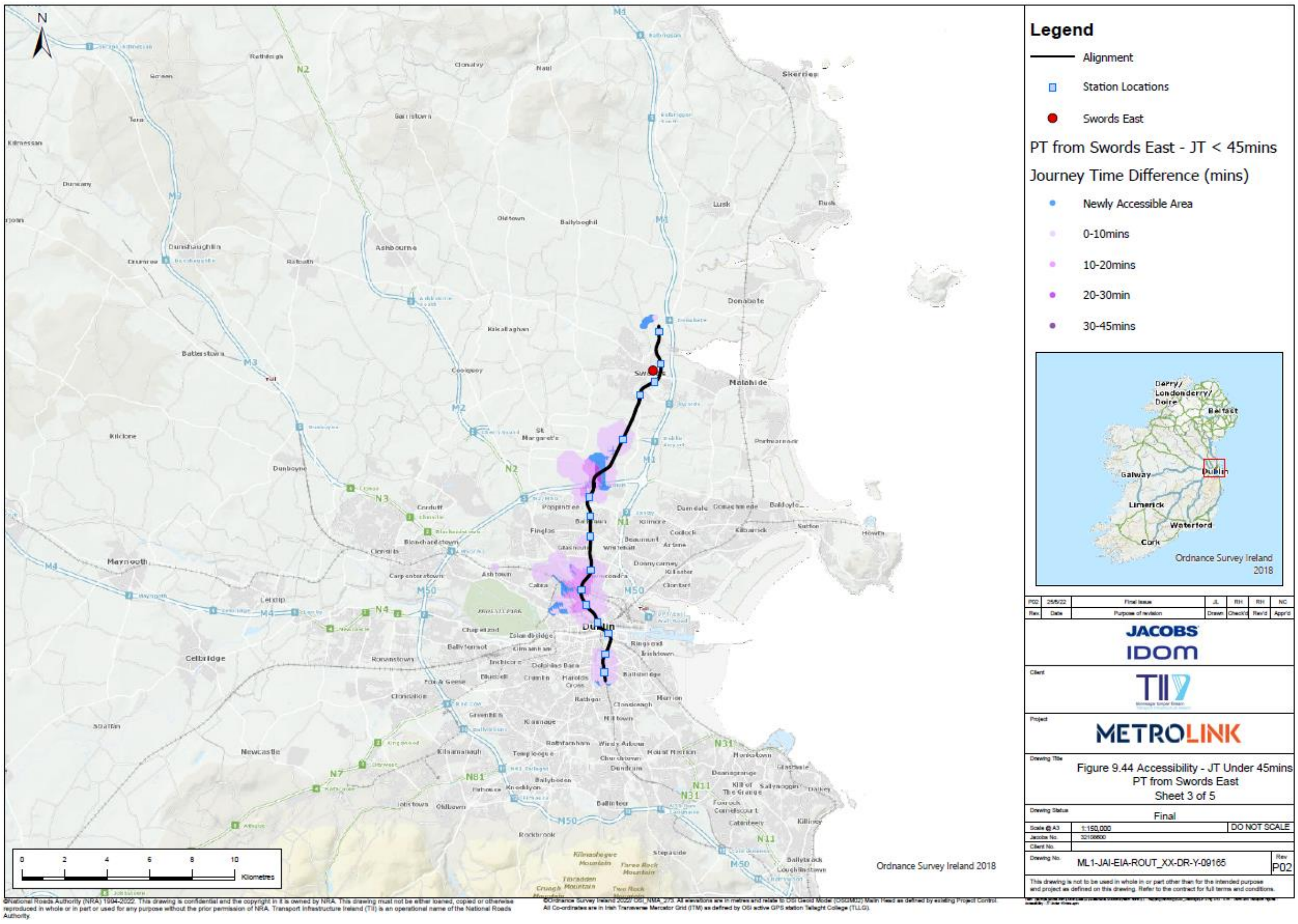

Figure 8.3: Differences in Public Transport Journey Time Catchments in the morning peak from East Swords

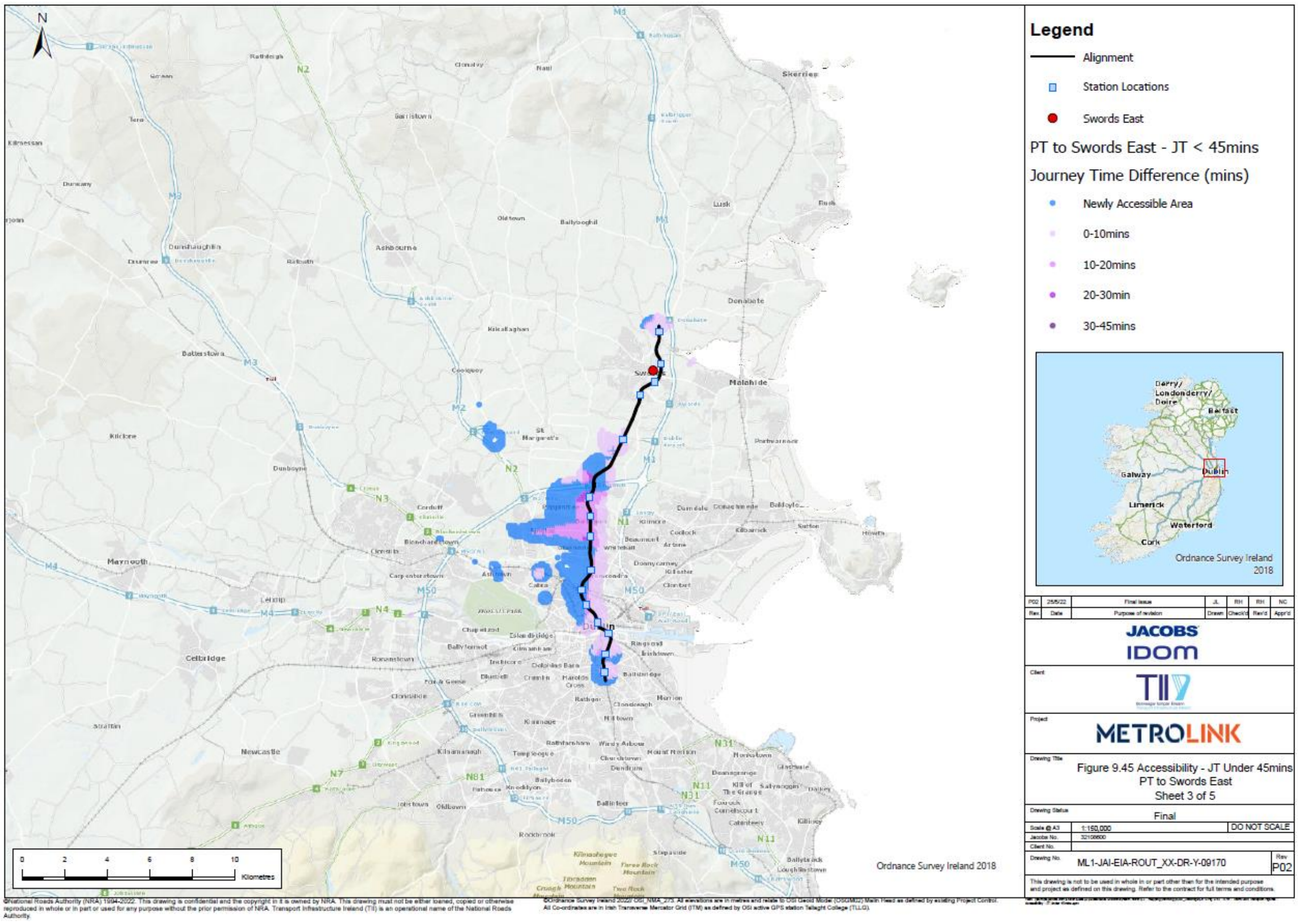

Figure 8.4: Differences in Public Transport Journey Time Catchments in the morning peak to East Swords

Figure 8.5 and Figure 8.6 present the differences in public transport journey times to and from North-west Swords. North-west Swords is a largely residential area, and therefore would contribute to commuting traffic along the alignment. As such, a number of areas in the City Centre are newly accessible by public transport within 45minutes, which offers significant opportunity for employment, as the job density is much higher in the City Centre.

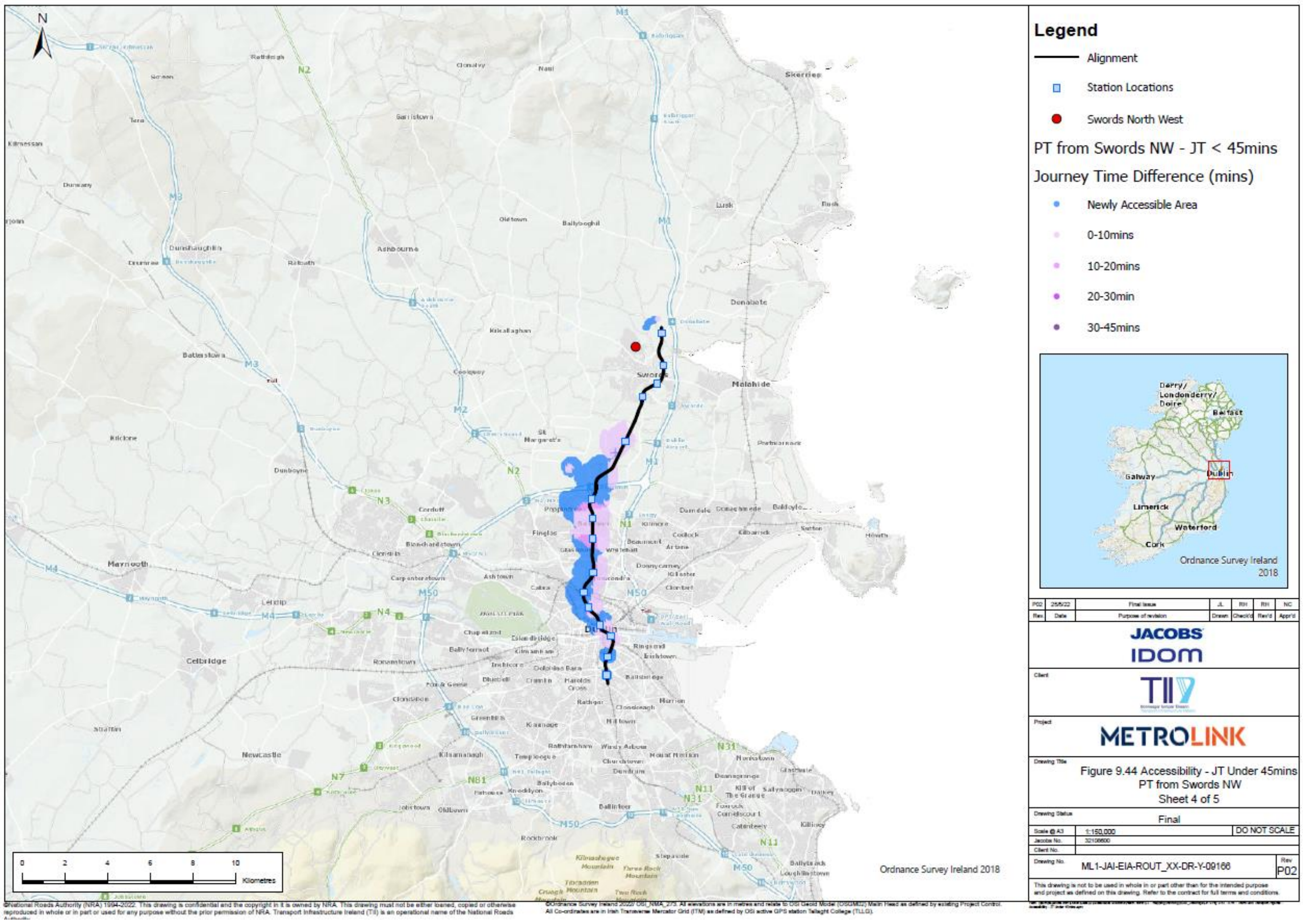

Figure 8.5: Differences in Journey Time Catchments in the morning peak from North-West Swords

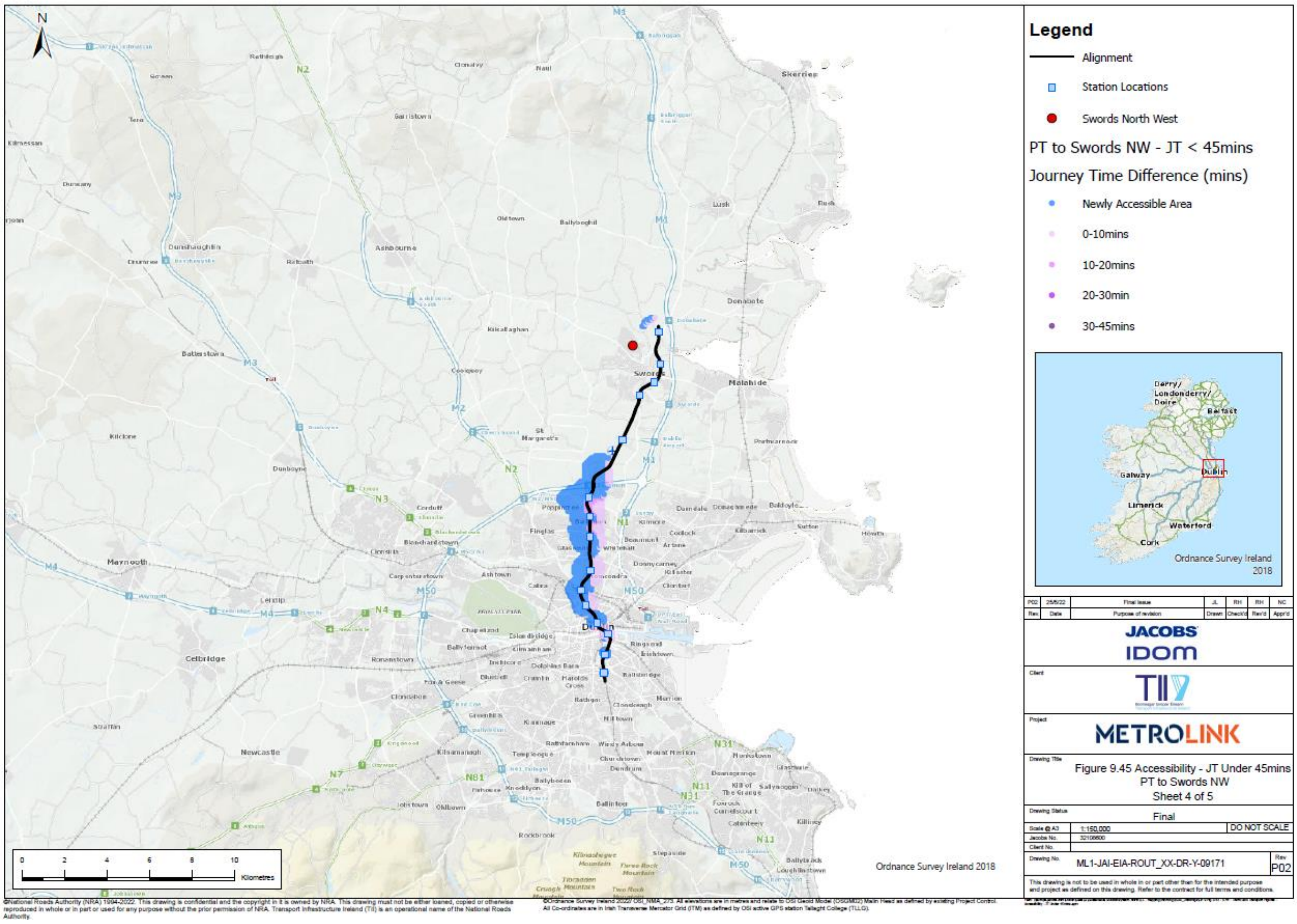

Figure 8.6: Differences in Journey Time Catchments in the morning peak to North-West Swords

Figure 8.7 and Figure 8.8 present the differences in public transport journey times to and from South-west Swords. South-west Swords is an area of High Technology employment, and therefore would be an attractive area for passengers. Journey time savings and newly accessible areas within 45minutes can be seen surrounding the residential areas of Ballymun, Glasnevin and Drumcondra, where people may be encouraged to seek employment opportunities in the South-west Swords area.

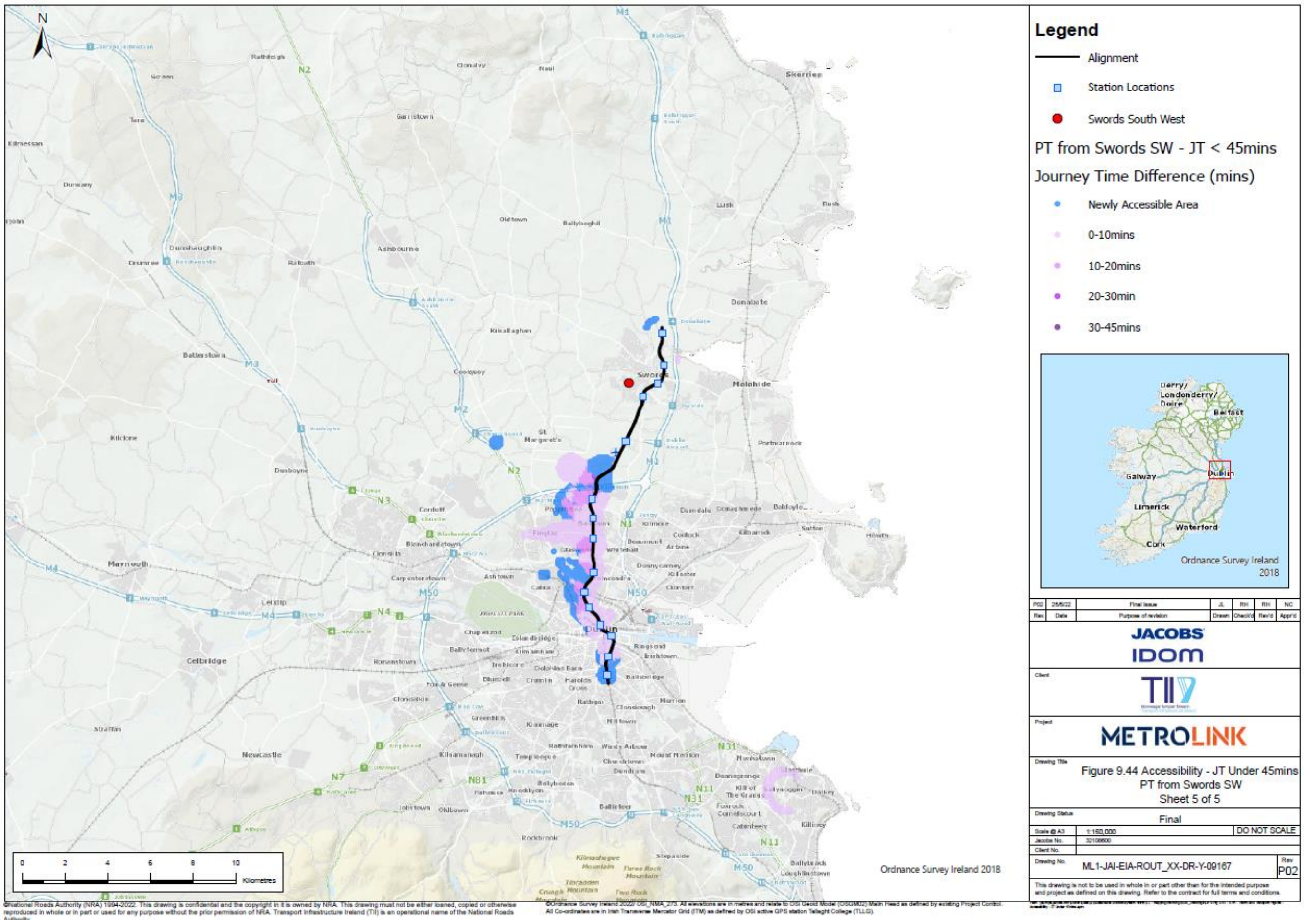

Figure 8.7: Differences in Public Transport Journey Catchments in the morning peak from South-West Swords

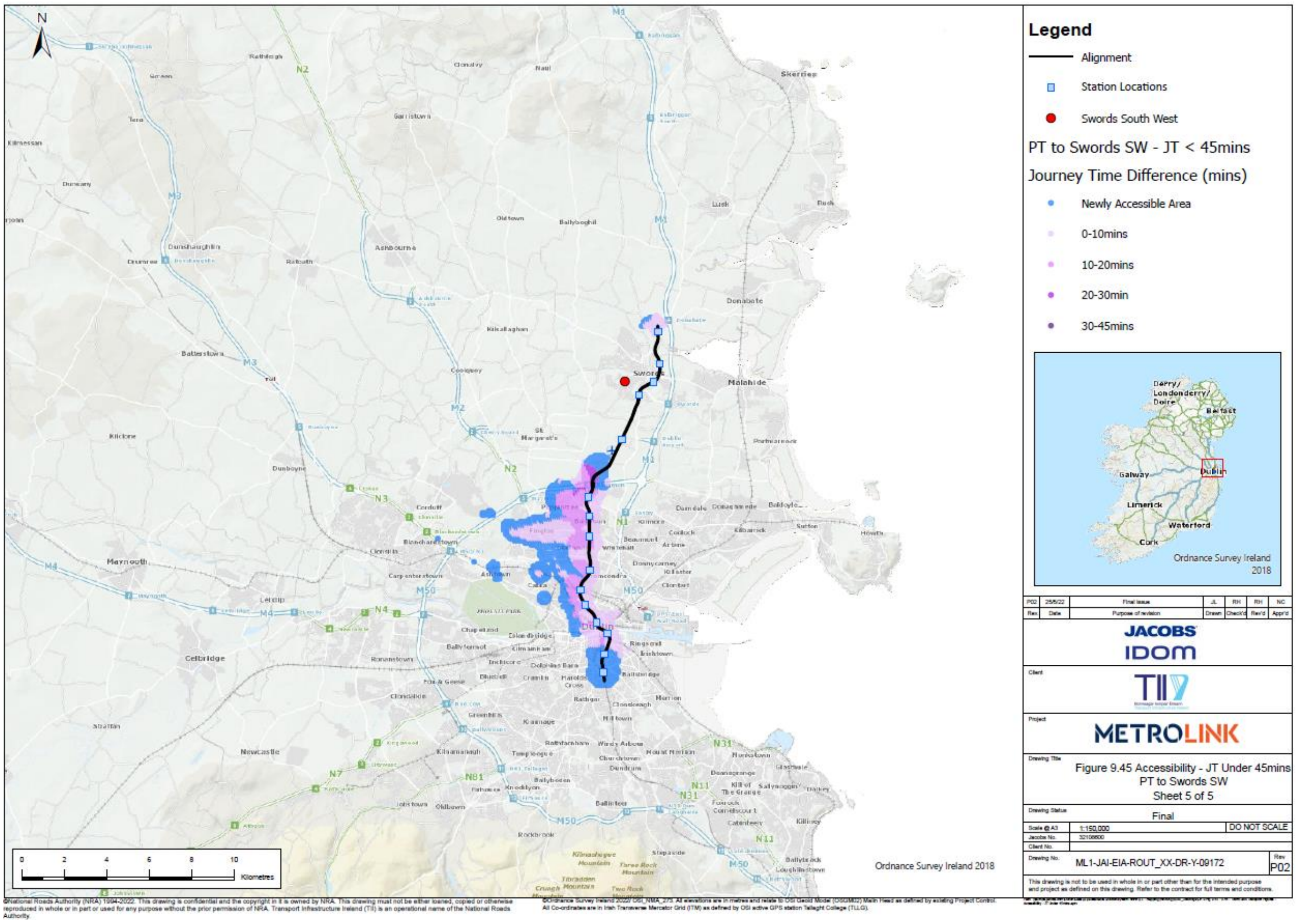

Figure 8.8: Differences in Public Transport Journey Catchments in the morning peak to South-West Swords

Figure 8.9 and Figure 8.10 illustrate the areas where additional population have enhanced accessibility to and from DCU within 45 minutes with the proposed Project in place. Whilst these areas may currently facilitate accessibility for some of the population, an additional 144,877 people will be able to access DCU in less than 45 minutes when the proposed Project is in place.

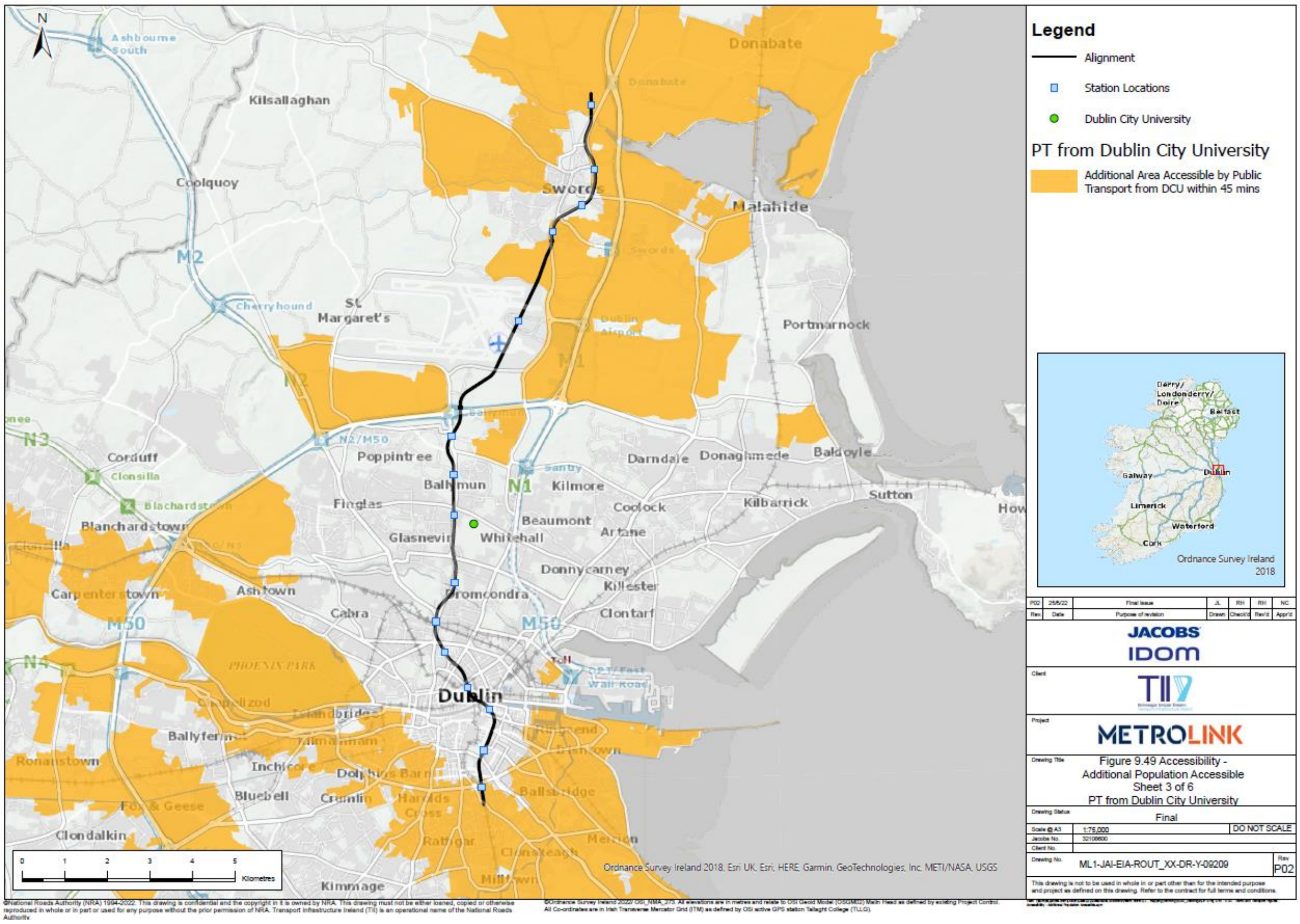

Figure 8.9: Additional Population Accessible from Dublin City University by Public Transport in morning peak

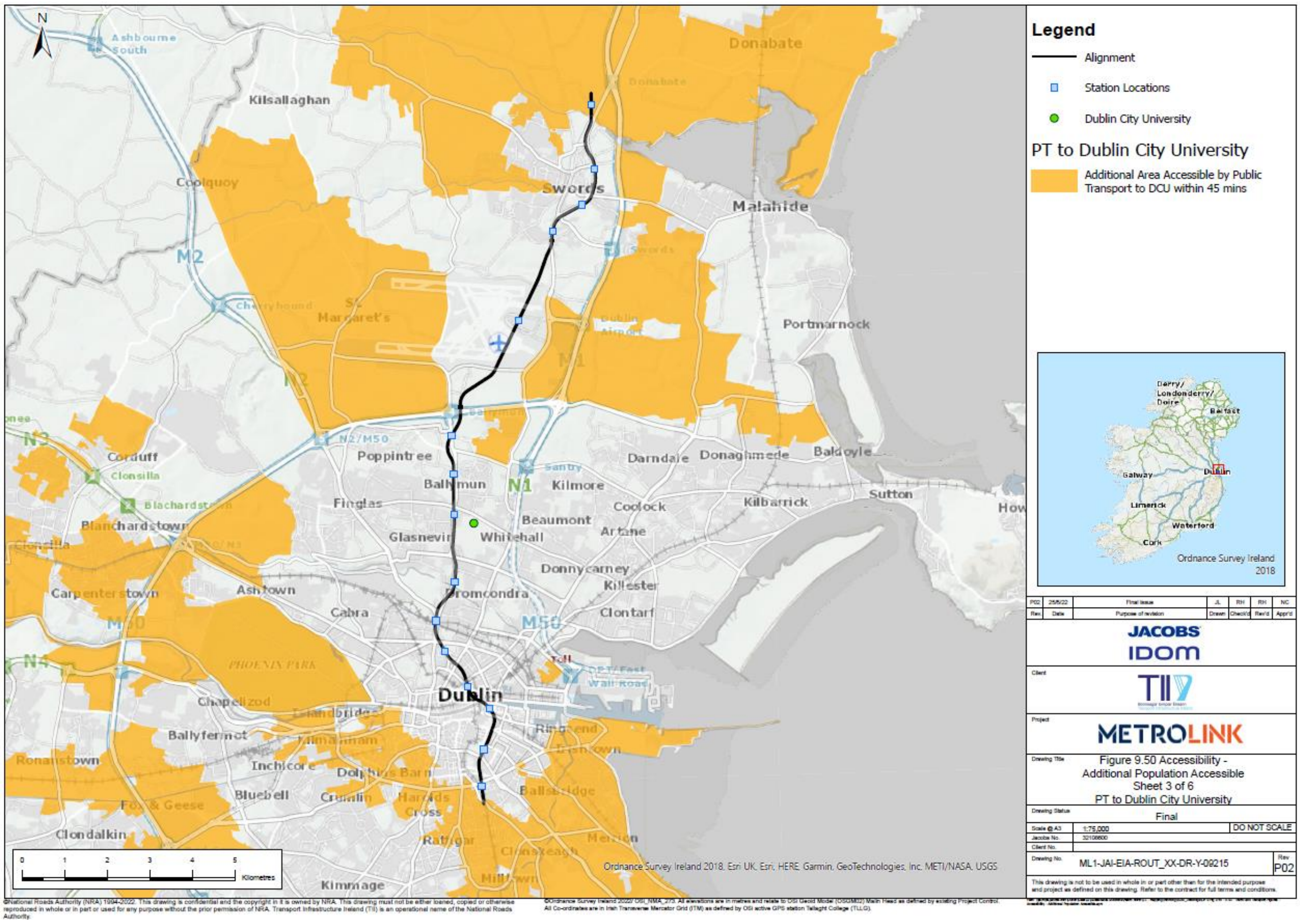

Figure 8.10: Additional Population Accessible to Dublin City University by Public Transport in morning peak

Figure 8.11 and Figure 8.12 illustrate the areas with enhanced accessibility to and from Castle Park in Swords. These areas may currently facilitate accessibility for some of the population, however with the proposed Project in place, an additional 109,300 people are able to access Swords in less than 45 minutes by public transport. Current accessibility may be restricted by distance to walk to a bus stop, or other facilities, however with the proposed Project in place, those restrictions are reduced, and improved accessibility is provided to the population in these areas. As such, approximately 99,500 additional people are able to access the surrounding areas from Swords Castle Park in less than 45 minutes when the proposed Project is in place.

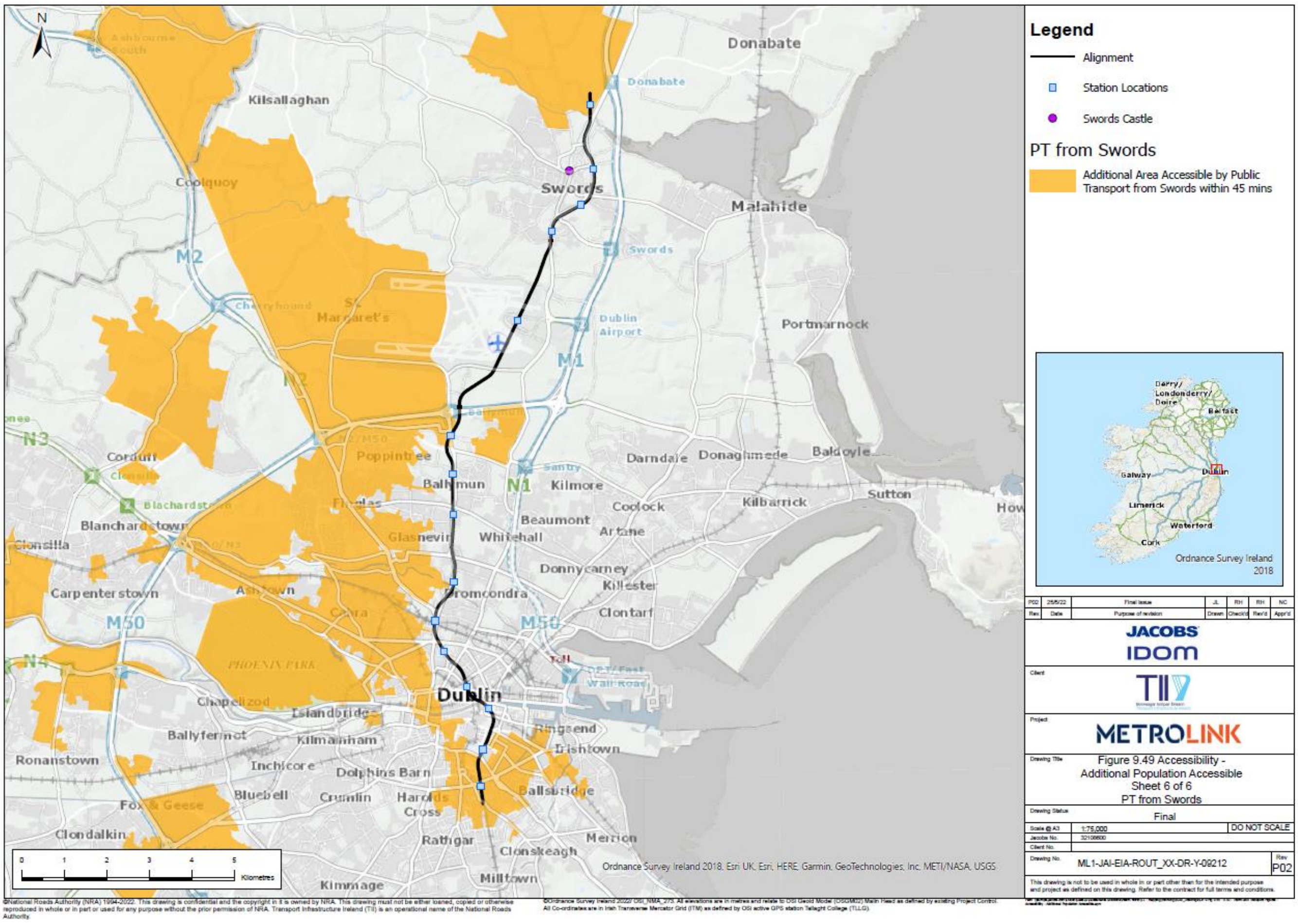

Figure 8.11: Additional Population Accessible by Public Transport from Swords in morning peak

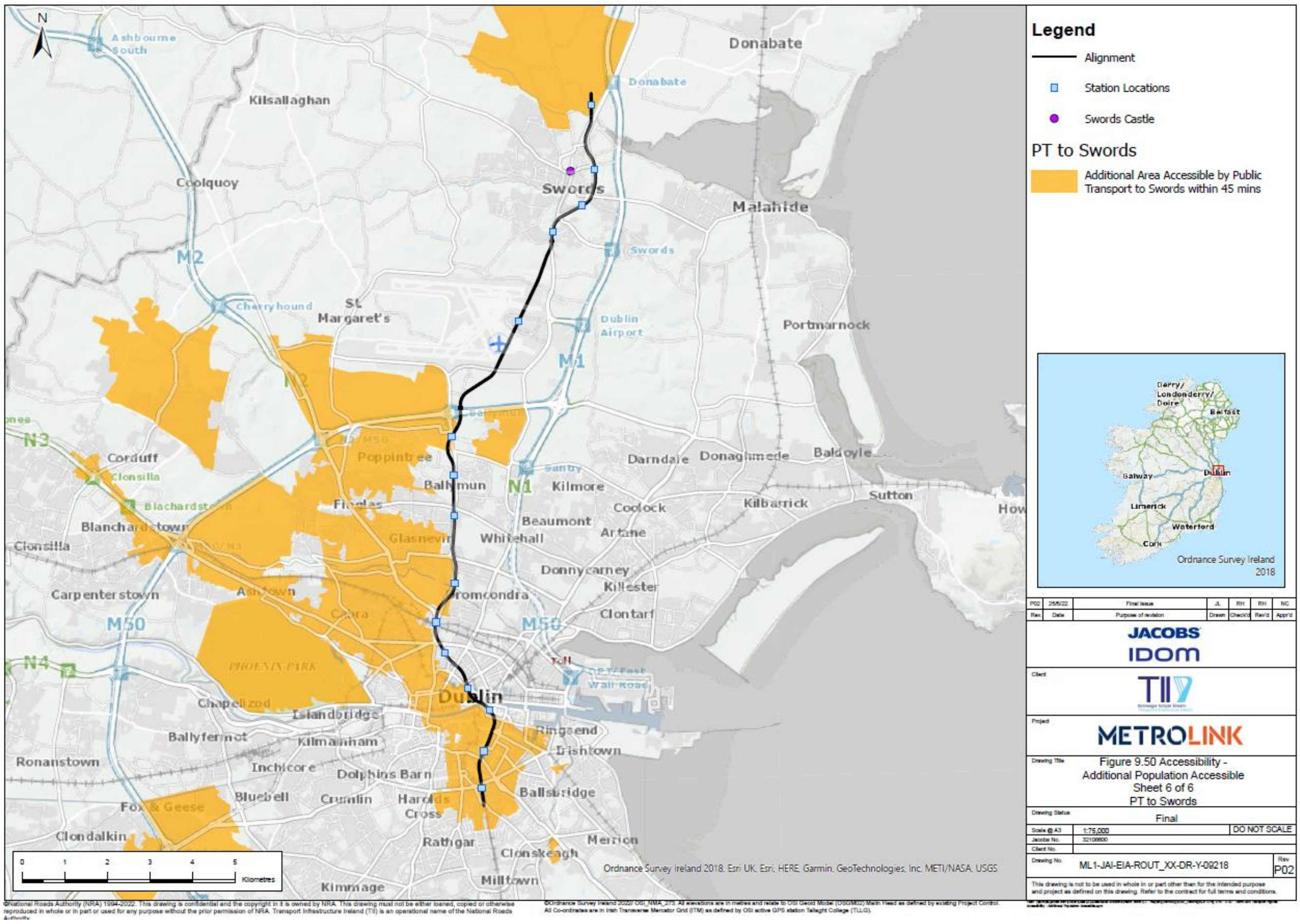

Figure 8.12: Additional Population Accessible by Public Transport to Swords in morning peak

Similar analysis for St Stephen's Green has been undertaken, with Figure 8.13 and Figure 8.14 illustrating the areas where additional population have enhanced accessibility to and from St Stephen's Green within 45 minutes, when the proposed Project is in place. Current accessibility may be restricted or some of the population in these areas due to the reasons outlined above. In total, an approximate 81,900 people will be able to access St Stephen's Green in less than 45 minutes, when the proposed Project is in place.

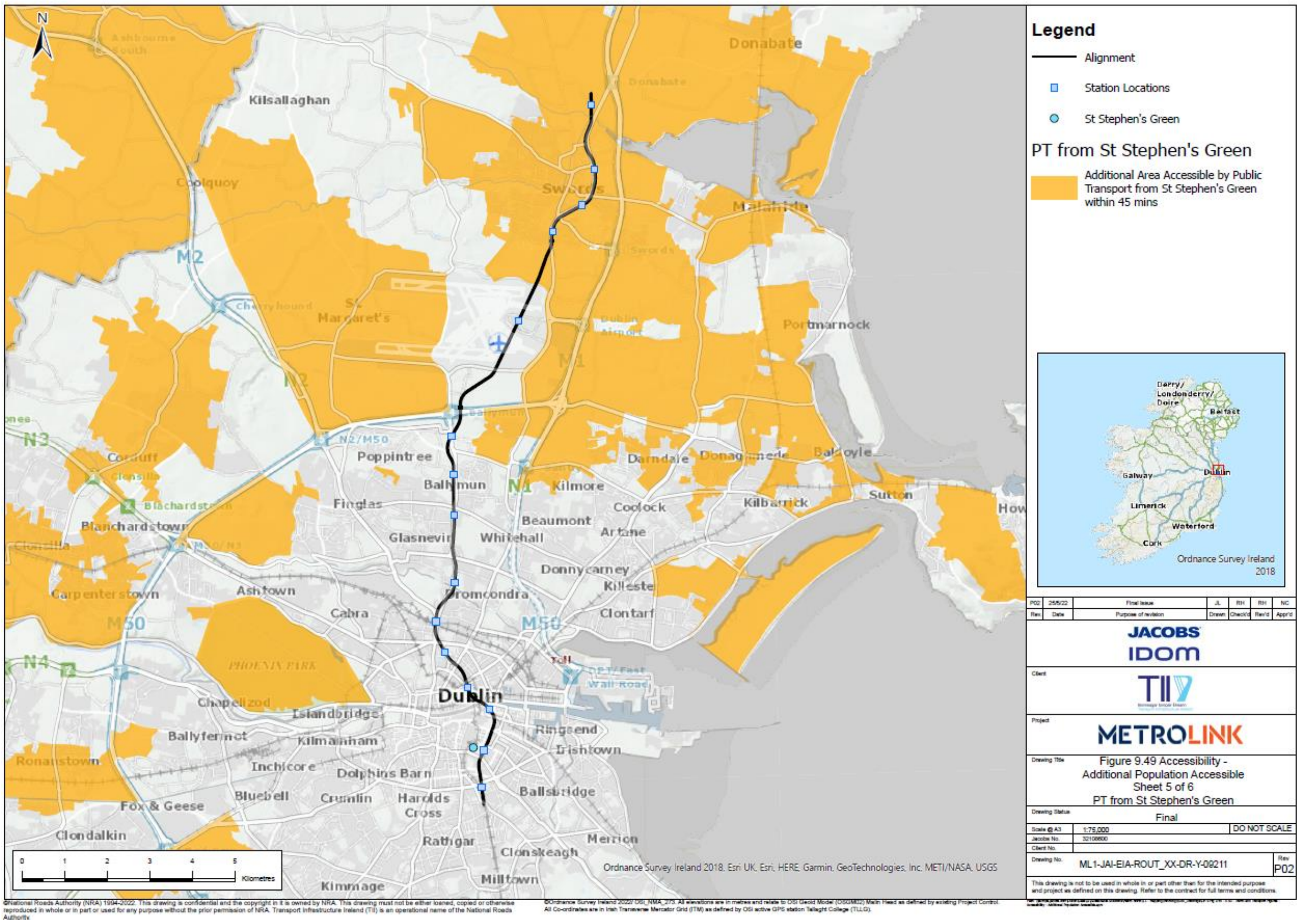

Figure 8.13: Additional Population Accessible from St Stephen's Green by Public Transport in morning peak

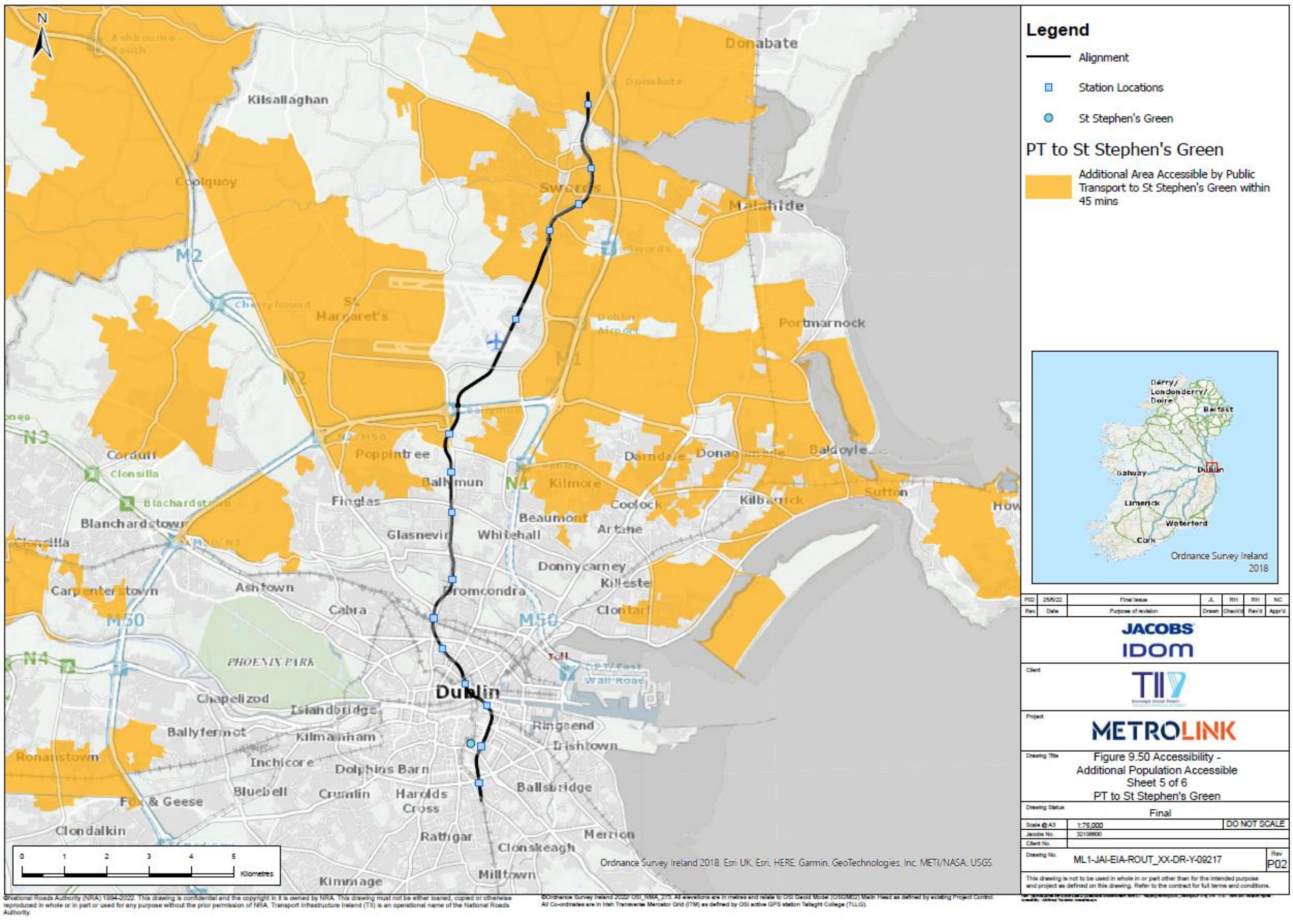

Figure 8.14: Additional Population Accessible to St Stephen's Green by Public Transport in morning peak

Figure 8.15 and Figure 8.16 illustrate the areas where additional population have enhanced accessibility to and from the Docklands within 45 minutes, when the proposed Project is in place. As highlighted previously, these areas may currently facilitate accessibility to and from the Docklands for some of the population, but with the proposed Project in place, an additional 29,134 people can access the Docklands in less than 45 minutes.

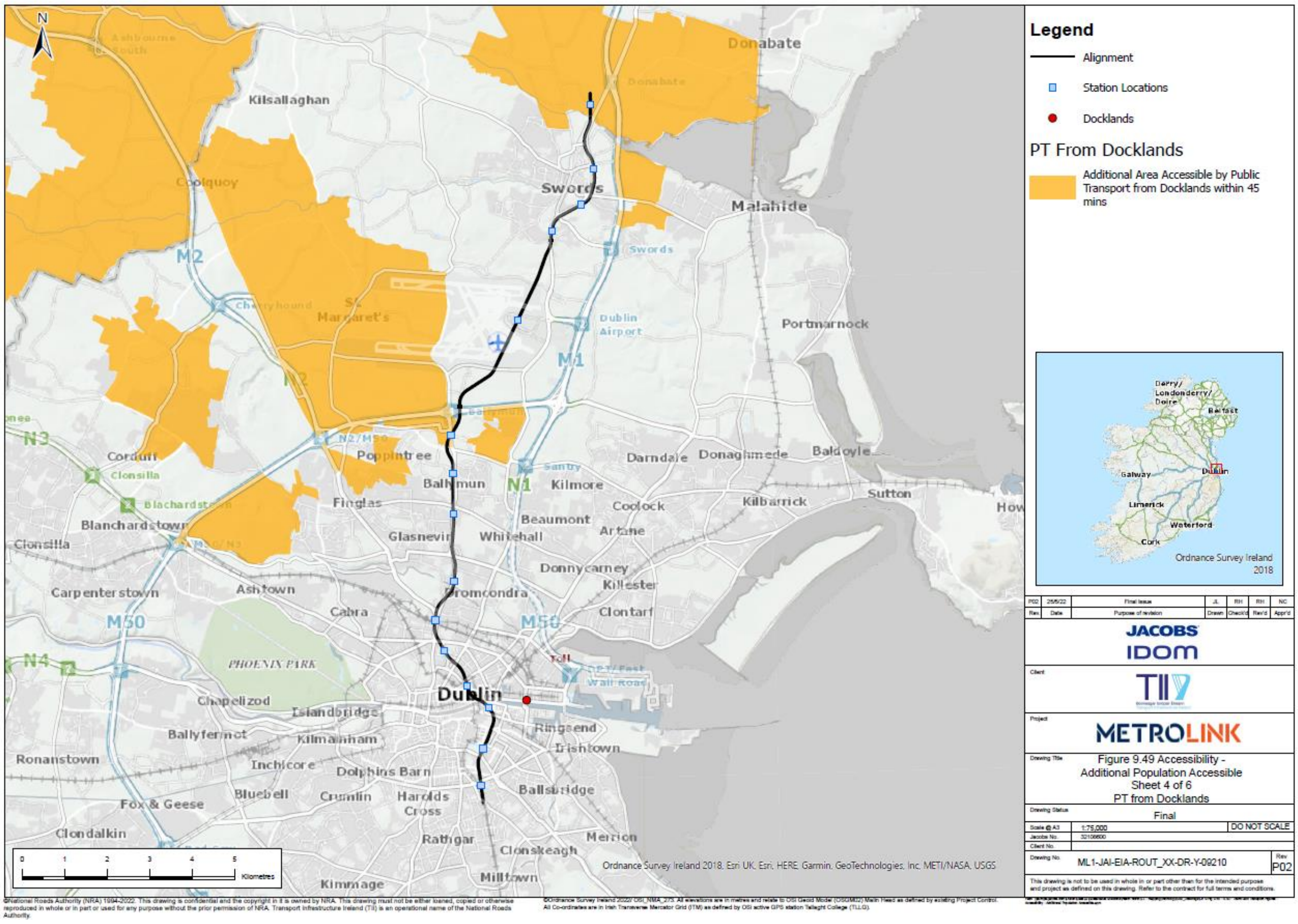

Figure 8.15: Additional Population Accessible from Docklands by public transport in morning peak

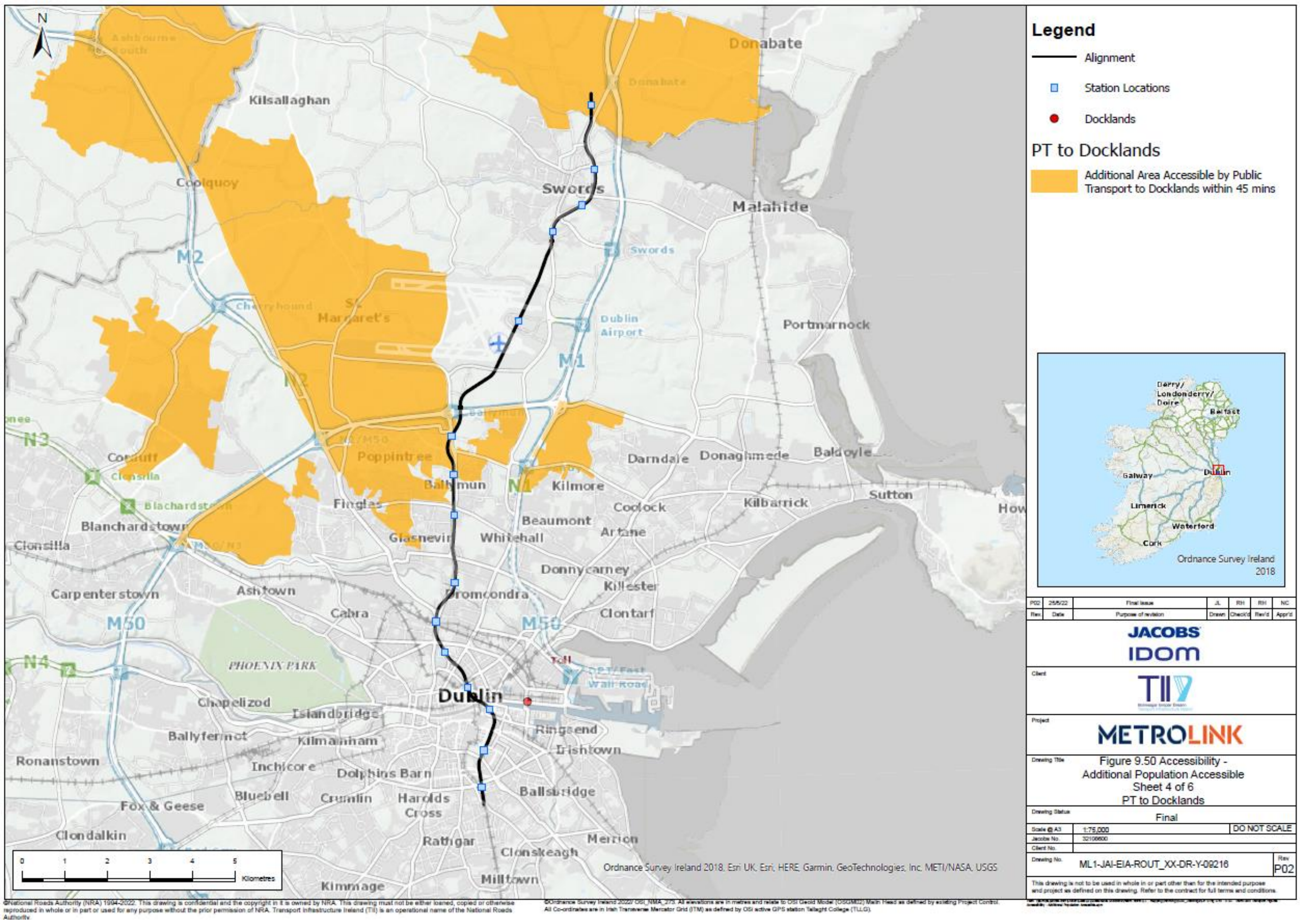

Figure 8.16: Additional Population Accessible to Docklands by public transport in morning peak

Figure 8.17 and Figure 8.18 highlight the areas from which Dublin City Centre is accessible within 45 minutes, following the introduction of the proposed Project, for which Dublin City Centre is not accessible within 45 minutes currently. There is an approximate 24,000 additional people that are able to access Dublin City Centre within 45 minutes with the proposed Project in place, with a large increase in population within the north corridor gaining improved accessibility.

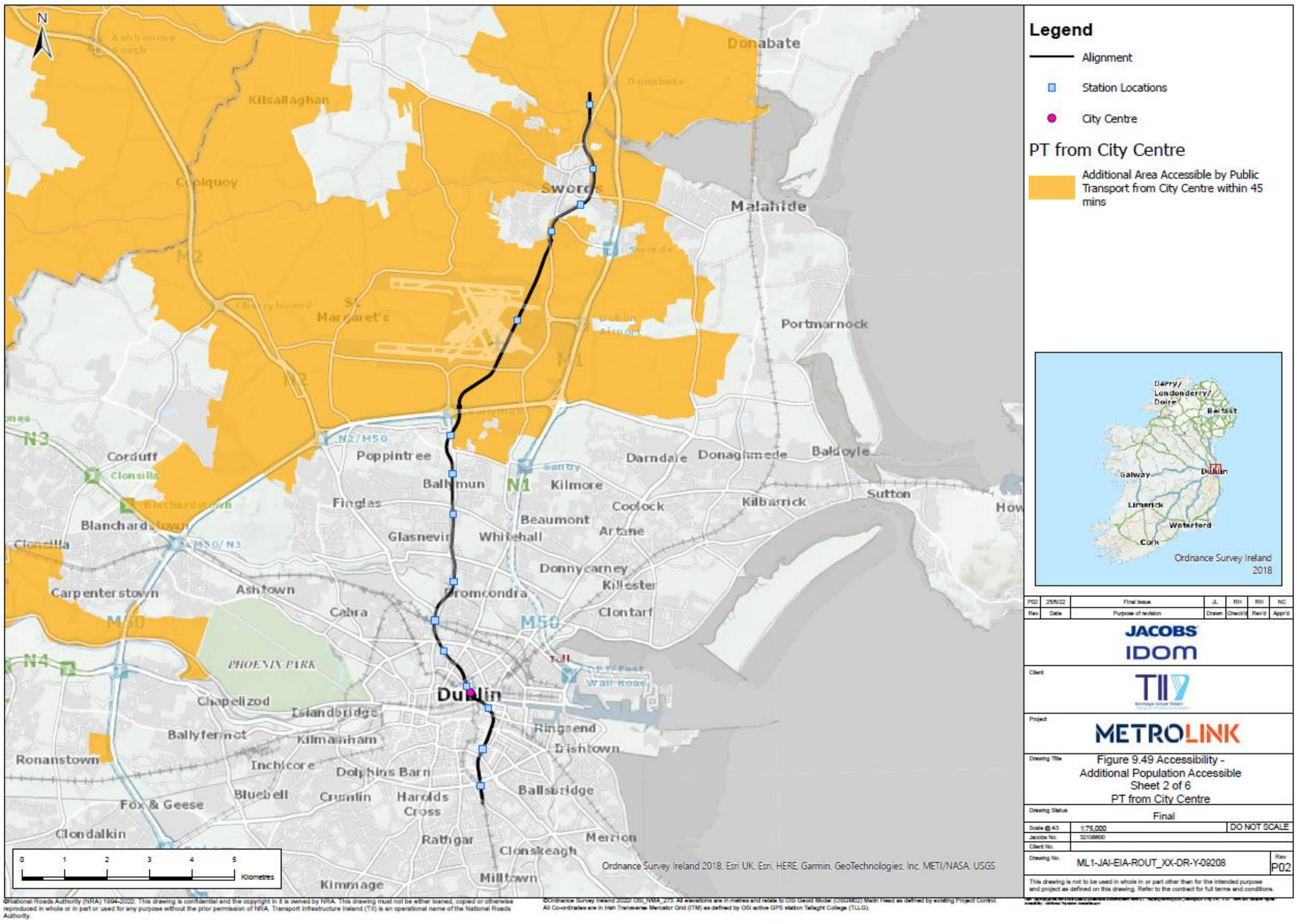

Figure 8.17: Additional Population Accessible from Dublin City Centre by public transport in morning peak

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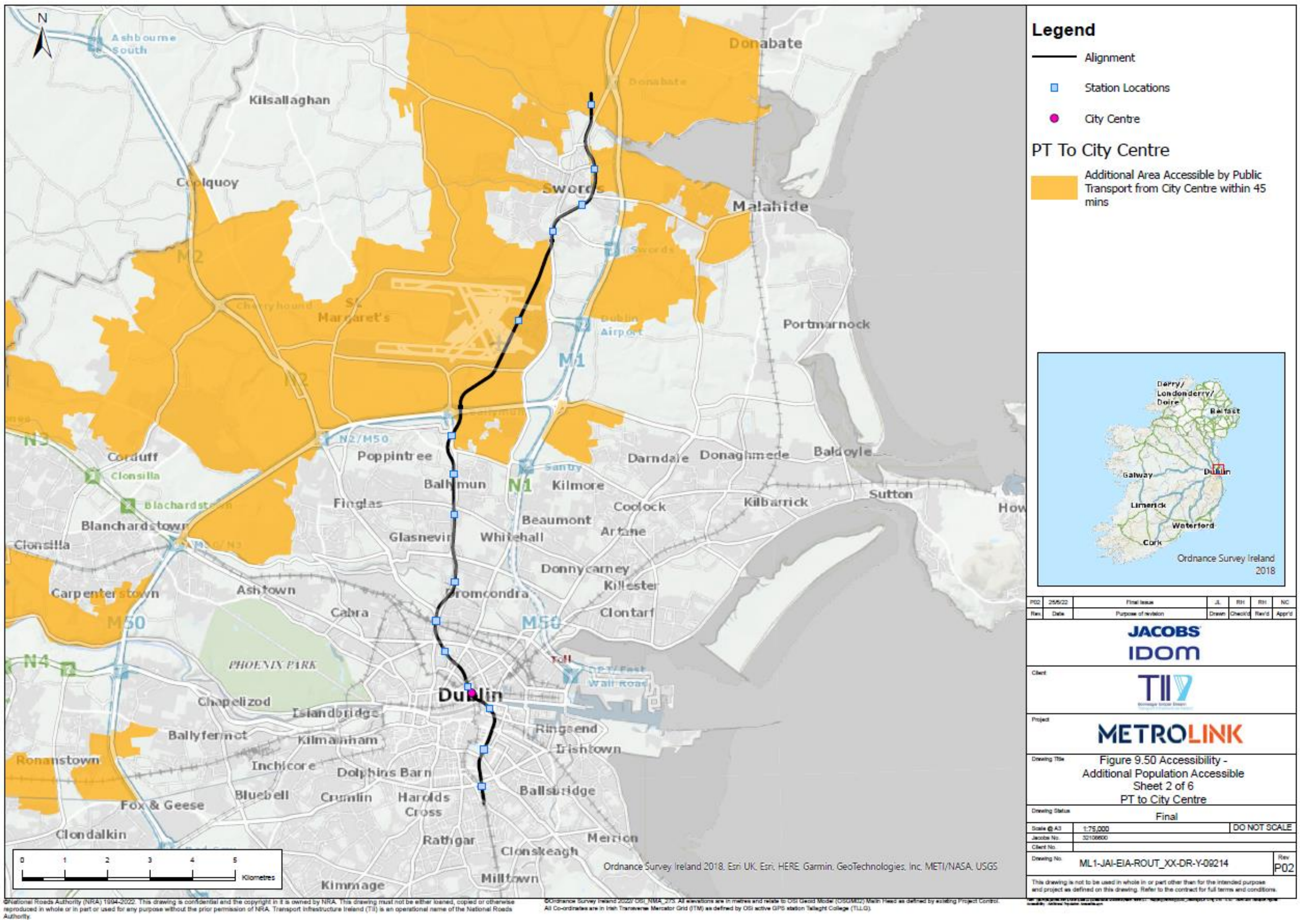


Figure 8.18: Additional Population Accessible to Dublin City Centre by public transport in morning peak

Contents

1. Introduction

1.1 Background

Jacobs/IDOM has been commissioned to undertake the Environmental Impact Assessment Report (EIAR) in support of the proposed Dublin MetroLink project (hereafter referred to as the proposed Project). The EIAR is being prepared to assess the environmental impacts of the proposed Project, including in relation to traffic and transport.

This Traffic and Transportation Assessment (TTA) assesses the operational impacts associated with the proposed Estuary Station and Park and Ride on the Traffic and Transport network in the local area. TTA's have been prepared for each individual station as well as an overall TTA for the proposed Project.

Jacobs/IDOM has also been commissioned to undertake a scheme traffic management plan (STMP). The STMP is a standalone report within the EIAR. The STMP assesses the impact of the construction of the Project on all road users and proposes mitigation measures where appropriate.

A summary of the TTAs and STMP will be included within the Traffic and Transportation chapter of the EIAR.

1.2 Assessment Scenarios

In order to provide a rounded assessment of the Project, its impacts have been reviewed for a range of future years, and in the context of two alternative future scenarios. The forecast years are 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). As outlined in Table 1.1, Scenario A includes the project and committed transport schemes only, while Scenario B includes a range of further planned schemes depending on the forecast year.

Table 1.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project
Do Minimum Scenario	Committed transport schemes in the absence of the Project
Do Something - Scenario A	Scenario with the Project and committed transport schemes only
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for Opening year (2035) and planned schemes under the Transport Strategy for the GDA for the Design Year (2050) and the Forecast Year (2065)

Committed transport schemes in the Do Minimum scenario and in Scenario A, that have been progressed through planning and are either under construction or are programmed into the capital expenditure budget, include, but are not limited to:

- Luas Green Line Capacity Enhancement – Phase 1;
- BusConnects Dublin Area Bus Network Redesign Services; and
- Dublin BusConnects Fares and Ticketing.

Scenario B represents the likely future receiving environment and is based on the delivery of the schemes identified within the National Development Plan for 2035, and on the implementation of the NTA's Greater Dublin

Area (GDA) Transport Strategy for 2050 and 2065. As such, this scenario considers the cumulative impacts of interactions between other projects that are most likely to impact on transport movements in the area. Schemes included in this scenario are, but are not limited to:

- Luas Green Line Capacity Enhancement - Phase 2;
- Luas Finglas;
- Luas Lucan;
- Dublin BusConnects Core Bus Corridors (planned 16 corridors); and
- DART+.

More information on each modelled scenario is available in the Transport Modelling Plan (Appendix A9.3).

1.3 Project Overview

The Project will be a high-capacity, high frequency rail line running from Swords to Charlemont, linking Dublin Airport, Irish Rail, the Dublin Area Rapid Transit (DART), Dublin Bus and Luas services, improving integration across public transport network in the Greater Dublin Area (GDA).

As well as linking major transport hubs, the Project will connect key destinations including Swords, Ballymun, the Mater Hospital, the Rotunda, Dublin City University and Trinity College with much of the 19-kilometre route running underground.

When operations commence, there will be trains every 3 minutes during peak periods. This can rise to a service every 90 seconds, with the system capable of carrying a peak line flow of 20,000 passengers per hour in each direction.

1.3.1 Estuary Station and Park and Ride

The proposed location for Estuary Station is shown in Figure 1.1. Estuary Station and the adjoining Park and Ride facility will be located in the townland of Lissenhall, to the north of Swords. The site is situated to the west of the R132 Swords Bypass and north of Ennis Lane. The Emmaus Retreat Centre is located to the west of the Estuary Station with the southern entrance about 50m from the station. The site itself is open countryside and holds a level of agricultural interest. To the southeast and separated by the R132 is the Lissenhall Industrial Estate while to the south of the station and P&R lie the Broadmeadow and Ward Rivers, with the Balheary Industrial Park about 250m from the station on the outskirts of Swords.

The proposed Project’s northern extent is approximately 500m south of the M1 Junction 4 (Lissenhall). As well as the station terminus, this location will also have a multi-storey Park and Ride facility which will provide approximately 3,000 parking spaces. The multi-storey building is positioned between the platforms of Estuary MetroLink station to the west, and the R132 to the east.

The main approach for vehicles to the car park will be from the south-east and the north. There will also be a pedestrian route and cycle path from the west.

The station also provides for bus interchange, taxi, Kiss and Ride facilities and cycle parking, with a capacity of 254 bicycle spaces. There are two entrances to the Park and Ride site, one directly from the R132 and one from the Swords Western Distributor Road. The Swords Western Distributor Road will in turn connect to the R132, via a signalised junction.

The access on the R132 will provide access to buses and taxis only, whilst the entrance from the Swords Western Distributor Road will provide access for all vehicle types.

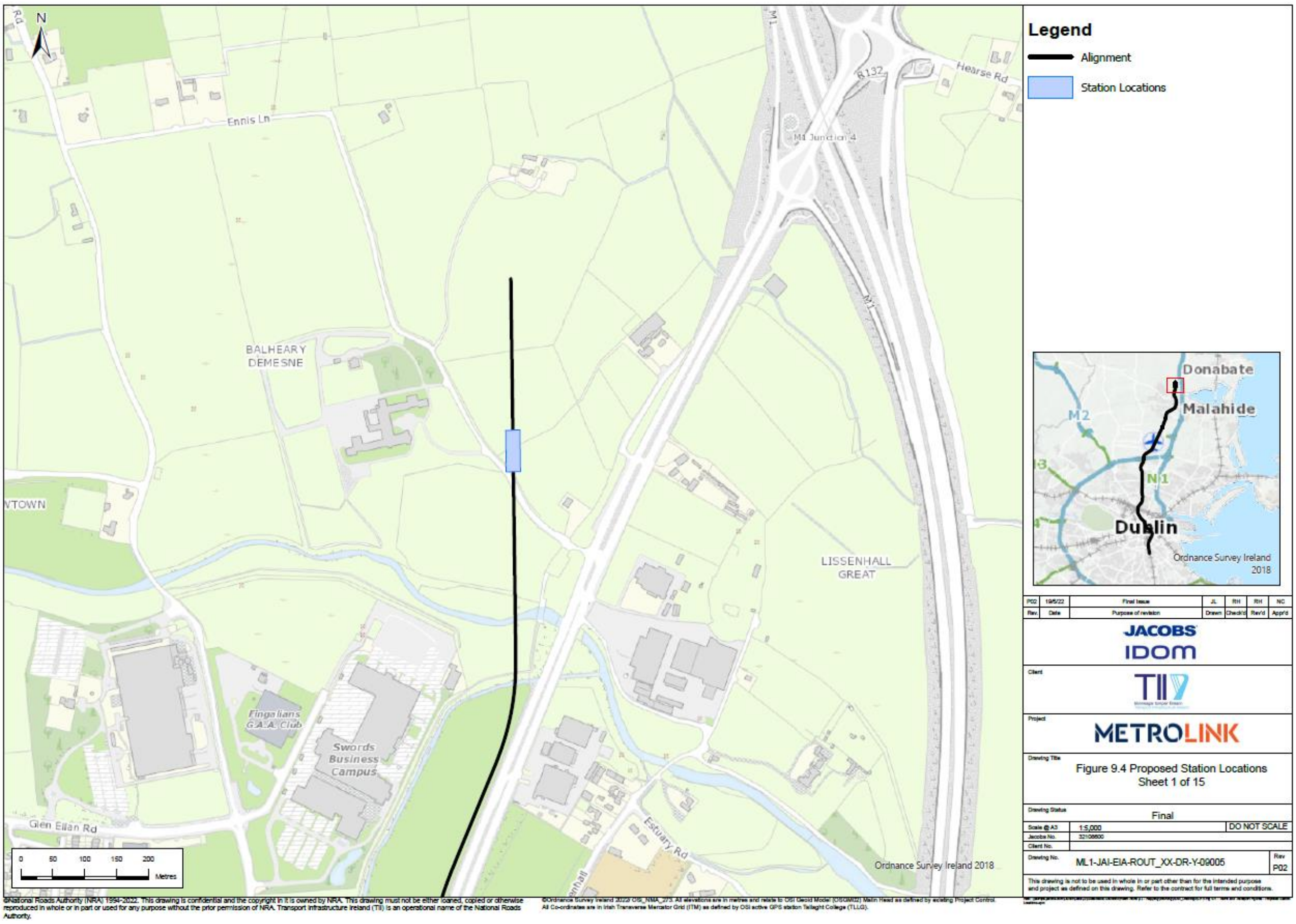


Figure 1.1: Proposed Estuary Station Location

2. Policy Context

Reference should be made to the Chapter 3 of the Overall Scheme TTA, and Planning Policy Report (ML1-JAI-PLD-ROUT_XX-RP-Y-00020) for further detail on the overall project in relation to key national and regional policies.

At present, the lands surrounding the proposed Estuary Station location have limited residential or commercial developments. As such, there are also limited pedestrian and cycling facilities in the area, with the presence of the Broad Meadow River restricting permeability to the nearby Seatown and Swords areas.

This section will focus on an assessment of the Estuary Station proposals in relation to the following key local policies:

- Transport Strategy for the Greater Dublin Area 2016-2035;
    - Park & Ride Strategy: Greater Dublin Area 2021
- Fingal Development Plan 2017-2023;
    - Swords Development Strategy;
    - Your Swords: An Emerging City, Strategic Vision 2035; and
    - Estuary West Draft Masterplan 2019.
- Draft Fingal County Council Development Plan 2023-2029; and
- South Fingal Transport Study 2019.

2.1 Transport Strategy for the Greater Dublin Area 2016-2035 – Park and Ride

The NTA's Transport Strategy for the Greater Dublin Area 2016-2035 notes that Park and Ride facilities serve 'to provide the opportunity for modal transfer from the private car to the public transport network, for trips where car use is necessitated at the point of origin.' It is intended that park and ride facilities will be provided to facilitate those living beyond the local walking catchment of rail, or feasible alternative public transport services, to access destinations through the public transport network, identifying the Swords area as a location for a future strategic Park and Ride.

The Strategy notes that 'an essential prerequisite of park and ride provision is that such facilities improve public transport accessibility without unduly worsening road congestion, or increasing the total distance travelled by car'. As such, they should be located in areas where the road network has the capacity to absorb the impact of car traffic and should not encourage partial private car use rather than end-to-end public transport trips.

The Strategy therefore intends to:

- Develop a network of strategic rail-based park and ride facilities at appropriate points where rail services intersect with the national road network, adjacent to, or outside of, the M50. These facilities are, or would be located at Swords, Finglas, Dunboyne, Liffey Valley, Naas Road, Carrickmines, Woodbrook and Greystones;
- Further develop the provision of local park and ride facilities at appropriate locations on the rail network in the outer parts of the Metropolitan Area and in the Hinterland area, where they improve public transport accessibility without worsening road congestion, or increasing car travel distance;

- Assess and determine the potential for bus-based park and ride, in particular, close to high quality road corridors, leading from Hinterland towns, with good bus priority to commuter destinations in the Metropolitan area; and

- Implement suitable charging structures for park and ride facilities to make it more likely that those who most need the service (i.e those outside walking distance and where alternative public transport options are not available), will obtain parking. In addition, implement, where appropriate, a suitable charging structure on local roads adjacent to park and ride facilities to discourage commuters from parking on such roads.

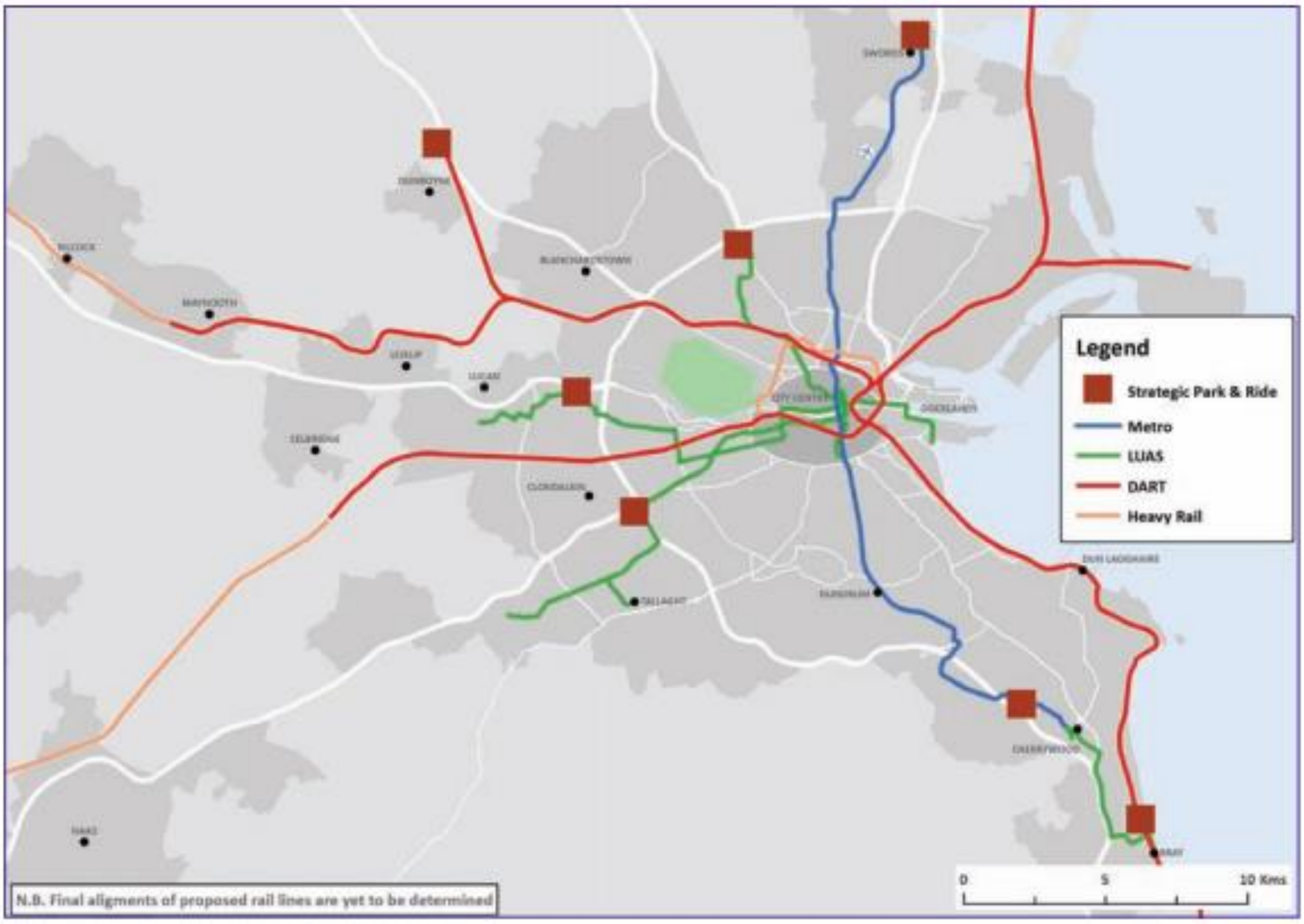


Figure 2.1: 2035 Strategic Park and Ride Facilities (Transport Strategy for the Greater Dublin Area 2016-2035)

2.1.1 Park & Ride Strategy: Greater Dublin Area 2021

The Park and Ride Strategy states ‘The provision of quality Park and Ride options will enhance the accessibility of public transport to a wider catchment of people. This will increase the usage of public transport into the future in line with the GDA Transport Strategy objectives and protect the investment in existing and new public transport schemes.

A Park and Ride can intercept trips where people are reliant on private car at an early viable point in their journey thereby reducing the distances travelled by private car with a corresponding reduction in carbon emissions and congestion.‘

Lissenhall is identified as a strategic park and ride location for either bus or metro based connections within the Park and Ride Strategy, as shown in Figure 2.2 below. This Park and Ride will allow for passengers from further afield to use public transport to access the Dublin City Centre.

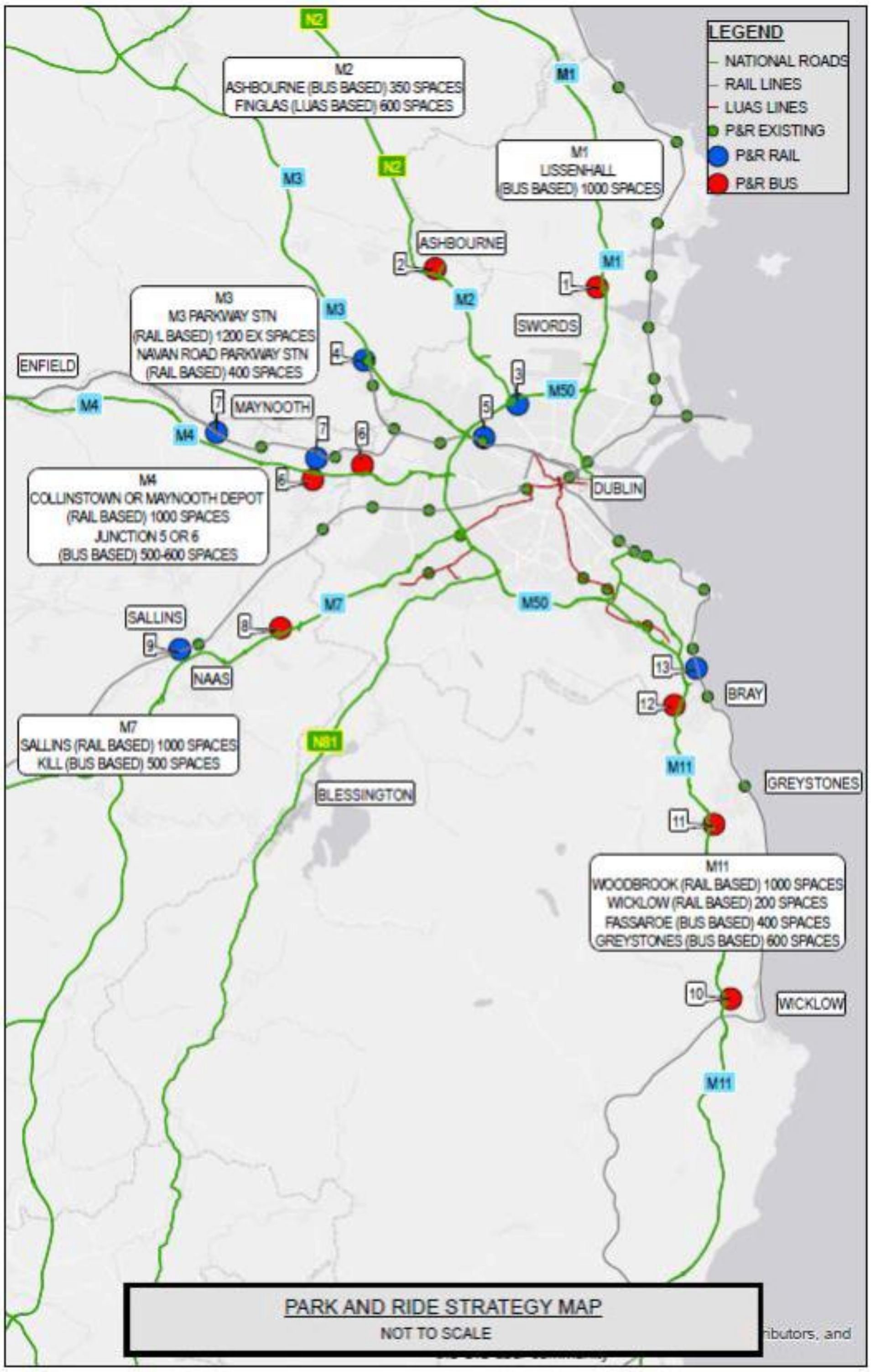


Figure 2.2: Park and Ride Strategy Map (Park & Ride Strategy 2021)

2.2 Fingal Development Plan 2017-2035

2.2.1 Swords Development Strategy

The Fingal Development Plan 2017-2035 provides for significant economic and population growth in Swords, Fingal's 'administrative capital'. A long term development strategy for Swords 'Your Swords: An Emerging City, Strategic Vision 2035' was published by Fingal County Council in 2008 (Fingal Development Plan, FCC), in which the vision is 'to promote and facilitate the sustainable development of Swords Town as a vibrant consolidated major town with a thriving economy; an integrated public transport network; and attractive and highly accessible built environment with the highest standards of housing, employment, services, recreational amenities and community facilities.'

The Development Strategy set out in the plan for Swords is as follows:

- Provide for a much-expanded employment, retail, commercial, educational, civic and cultural base.
- Develop high quality public transport links to Dublin City, Dublin Airport and the GDA, with particular emphasis on the indicative route for New Metro North (now called MetroLink).
- Target and facilitate the development of high tech and advanced manufacturing and other high intensity employment generating uses and service providing uses.
- Promote the development of high-quality living and working environments.
- Develop Swords in the long term in accordance with 'Your Swords: an Emerging City, Strategic Vision 2035'. This strategic vision is contingent on the indicative route for New Metro North (now called MetroLink) coming to Swords.
- Promote lands at Lissenhall as a longer-term strategic area, a mixed-use urban district providing for significant levels of employment and residential development.

2.2.2 Your Swords: An Emerging City, Strategic Vision 2035

The 'Your Swords: An Emerging City, Strategic Vision' ensures that Swords will incorporate and be synonymous with:

- A Green City – in terms of the physical landscape and sustainable environmental objectives.
- An Integrated Transport Strategy, comprising significant public transport services (including Metro North (now called MetroLink), and local and regional bus services) and strategically important road infrastructure.

The strategy envisages the Metro North Economic Corridor (MNEC), along the Metro North alignment (now called MetroLink), facilitating opportunities for high-density, mixed-use, and employment-generating activities, as well as for commercial and residential development. The designated sites for development will form sustainable districts with high connectivity and accessibility and will be provided with the necessary infrastructure.

2.2.3 Estuary West Draft Masterplan 2019

As part of the Fingal Development Plan 2017-2023, masterplans have been prepared for the Swords area, with Part D focusing on Estuary West (March 2019). The lands are approximately 19.4ha in size, situated to the north of Swords between the Glen Ellan Road and Balheary Road. The Broadmeadow Road binds the lands to the north, approximately 1.5km from the proposed Estuary Station.

It is envisaged that 'Estuary West will become a vibrant residential and mixed-use community, with active and friendly streetscapes.' The lands will also facilitate community uses in the form of a proposed school and local retail centre. The masterplan seeks to facilitate strong pedestrian, cyclist and public transport connections, while car dominance will be discouraged. Improved pedestrian and cyclist links will facilitate movement along the east-west axis of the Broadmeadow River, and to/from the proposed Estuary Station.

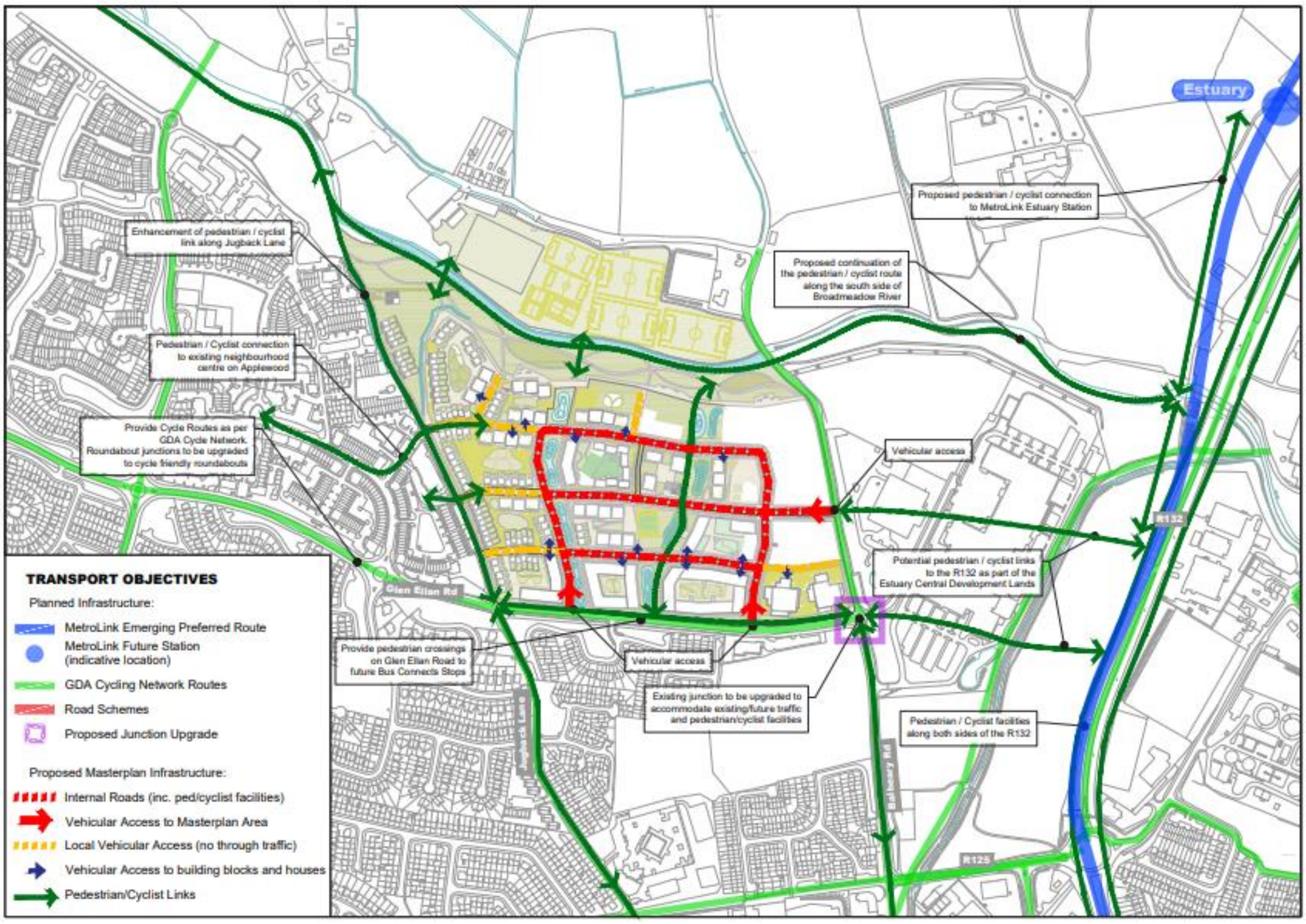


Figure 2.3: Transport and Movement at Estuary West (Estuary West Draft Masterplan, March 2019)

2.3 Draft Fingal County Council Development Plan 2023 - 2029

Building on the objectives of the Fingal County Council Development Plan 2017-2023, the Draft Fingal County Council Development Plan 2023-2029 recognises the role the delivery of MetroLink will play in connecting Swords to the Dublin City Centre, and the Dublin Airport. Swords is identified as a Key Town within the Development Plan, and the implementation of MetroLink will assist in meeting policies and objectives set out in the Development Plan.

Policy CSP28 – Promote and Facilitate MetroLink

- Promote and facilitate the development of Metrolink, connecting Swords to the Airport and on to the City Centre.

Objective CSO39 – Swords – Dublin Airport

- Support Swords-Dublin Airport as a key location for airport related economic development and employment provision linked to the protection and enhancement of access to Dublin Airport lands including the delivery of Metrolink.

The Park and Ride Facility at Estuary Station will support Policy CMP21 – Park and Ride:

- Support the provision of Park and Ride facilities in conjunction with supporting ancillary infrastructure to accommodate the transition to sustainable mobility modes at suitable locations in accordance with the large-scale transportation projects being delivered under the NTA Strategy.

2.4 South Fingal Transport Study 2019

In September 2017, Fingal County Council commissioned SYSTRA Ltd to undertake the South Fingal Study. The South Fingal Transport Study 'is a study of the transport network in South Fingal recommending key transport infrastructure and outlines the levels of land use development that will enable its sustainable growth leading up to the delivery of MetroLink and beyond' (FCC, 2017). As a result, the study considers the most critical road, public transport and active travel schemes that Fingal should implement in the next decade; sustainable ways of improving Fingal's integration and connectivity with Dublin City Centre; infrastructure required to meet demand in advance of the Project; and measures that Fingal County Council should implement to maintain and protect the strategic function of Dublin Airport into the future.

The recommendations identified with specific relevance to the Project include:

- The Swords Western Distributor Road would provide additional resilience to the local network in the context of diverting traffic from Main Street, and in addition to providing direct access to the MetroLink Park and Ride at Estuary;

- Future interchange to the MetroLink from other modes, including bus, walk and cycle should be considered as part of any redevelopment of Swords Main Street and the R132 Swords Bypass; and

- The Swords Western Relief Road is an objective of the Fingal Development Plan with a strategic function to provide a link between the M1/M50 and Dublin Airport to support the long-term growth of Swords.

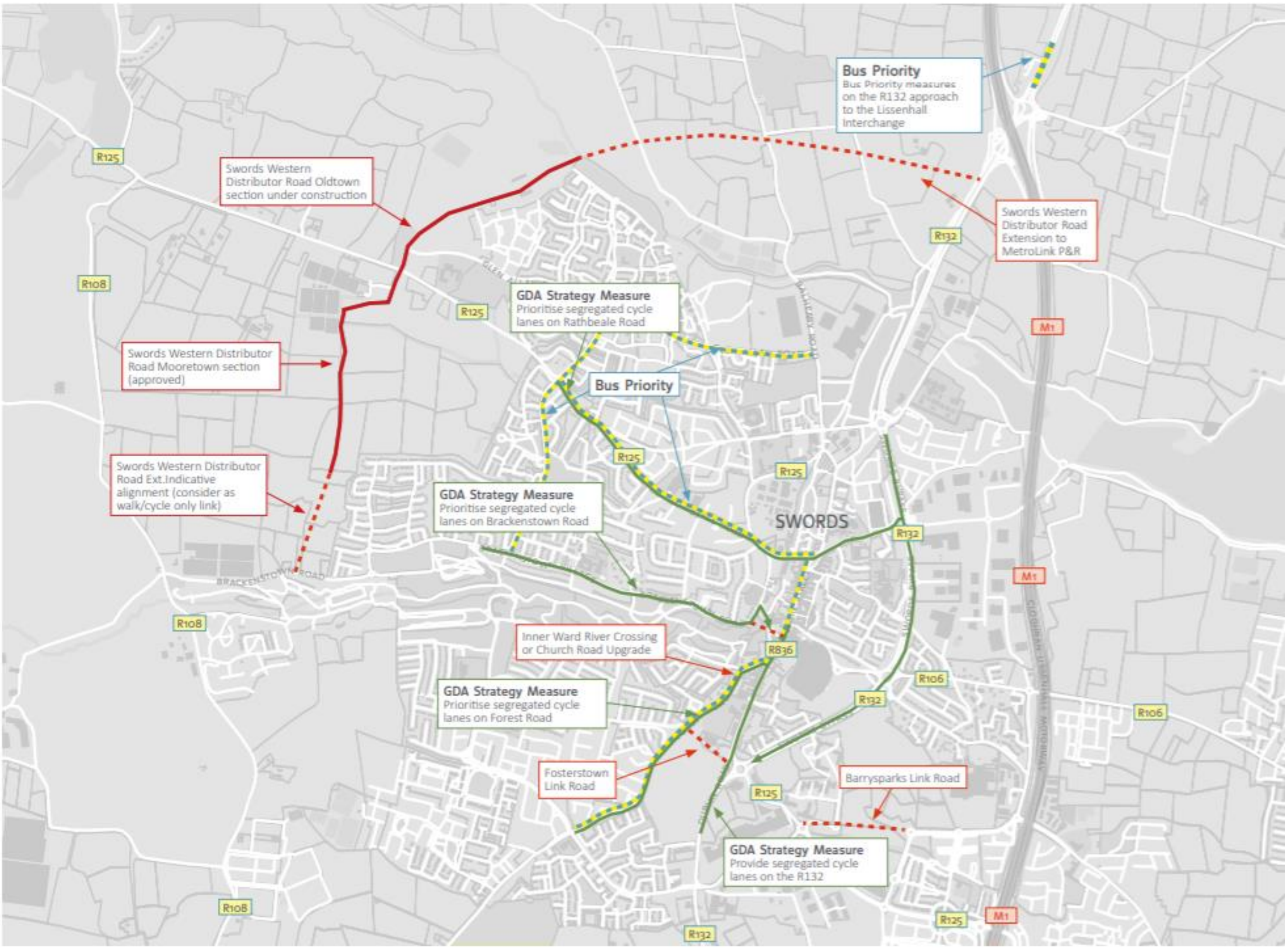


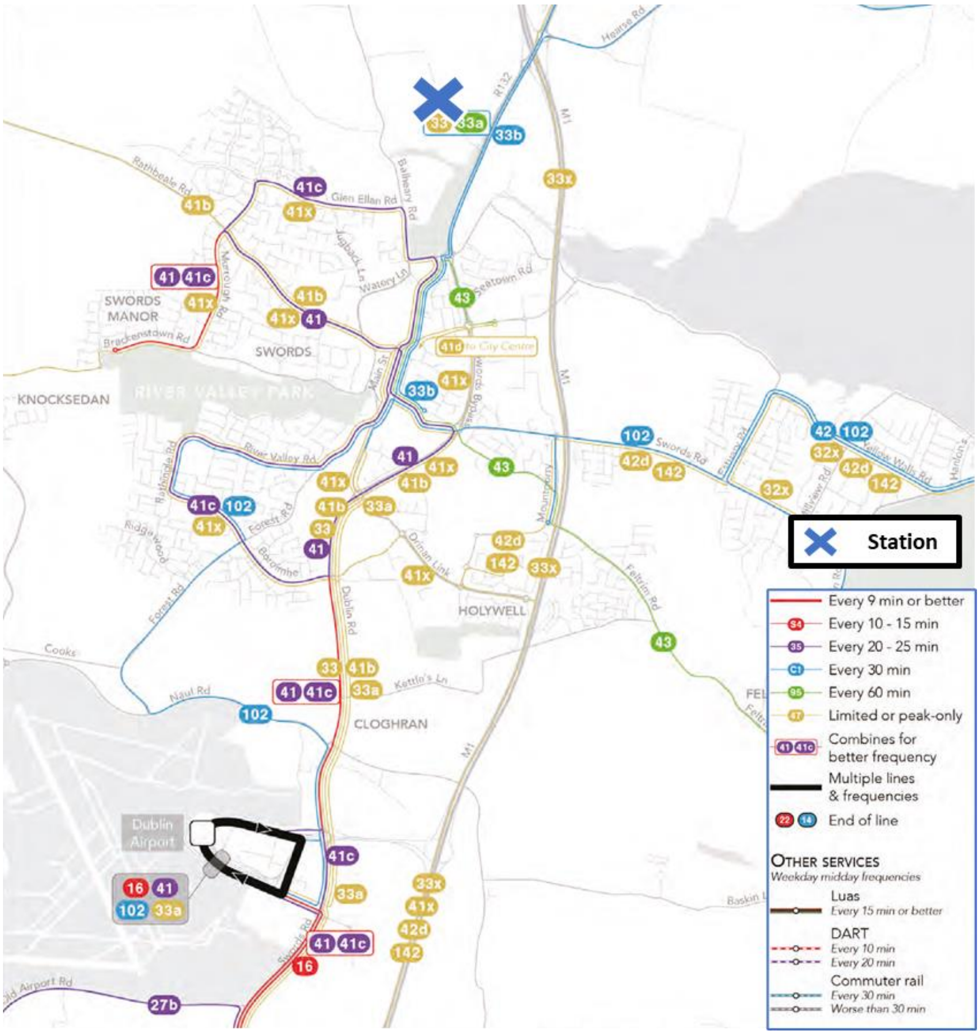
Figure 2.4: Swords Short Term Recommendations Map (source: South Fingal Transport Study)

3. Baseline Conditions

This section describes the existing receiving environment within the vicinity of the Estuary Station and the wider environs, and identifies the future receiving environment for all modes of transport if conditions are planned to change in advance of the construction of the Project, such as the delivery of other proposed infrastructure projects.

3.1 Existing Public Transport Network

The area surrounding the Estuary Station and Park and Ride is served by three bus services, the 33b runs every 30 minutes, the 33a has a service every 60 minutes, and the 33 has a limited or peak-only service. There are no regional services utilising the nearby bus stops.



(Base Source: www.busconnects.ie)

Figure 3.1: Existing bus network around Estuary Station and Park and Ride

Within 600m buffer of the proposed station there are 4 bus stops located along the R132, all serving routes 33 (from Balbriggan towards Lower Abbey Street), 33a (from Balbriggan/Skerries towards Dublin Airport), 33b (from Portrane towards Swords) and 33e (from Skerries towards lower Abbey Street).

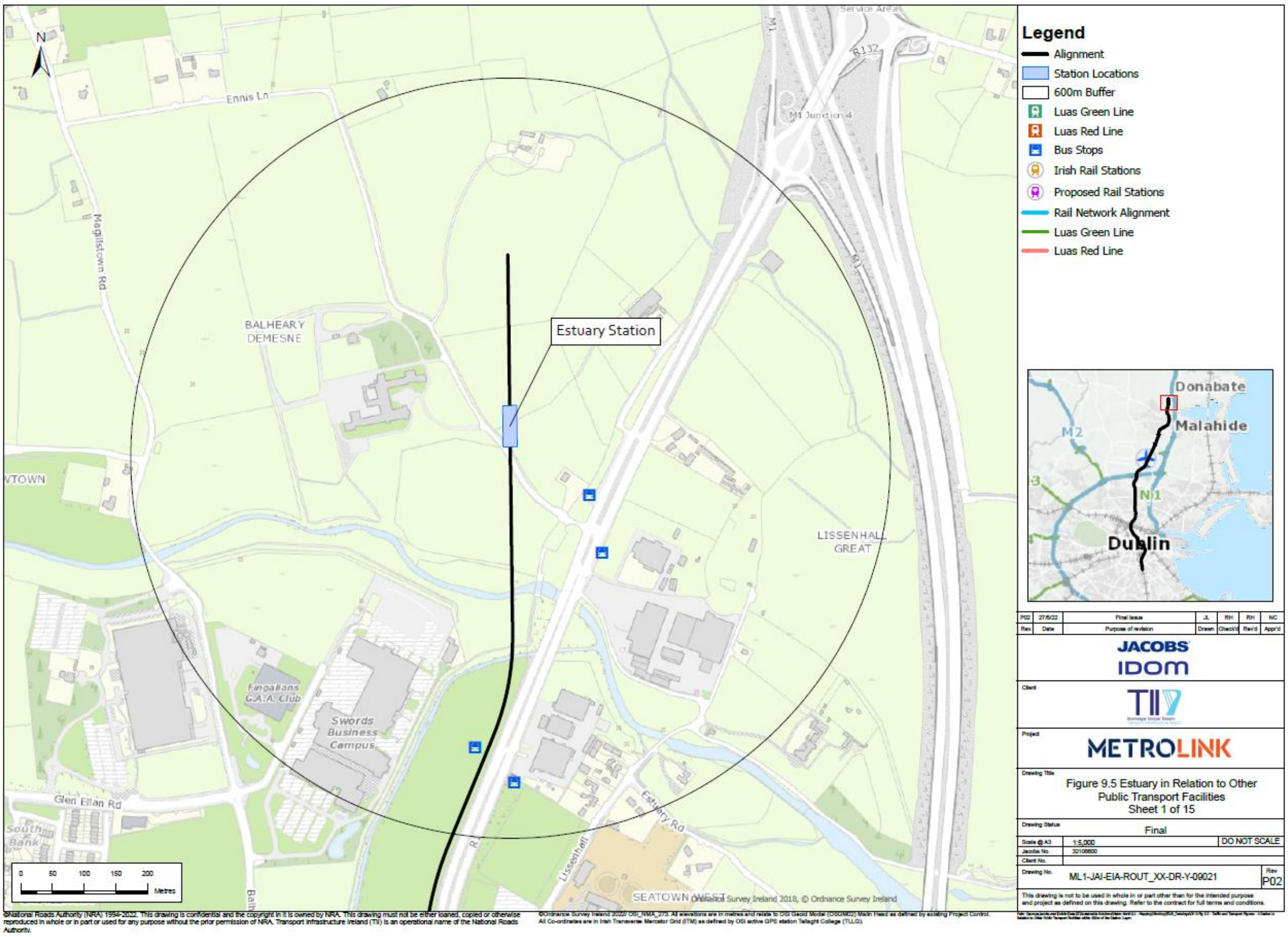


Figure 3.2: Existing Public Transport Facilities within 600m buffer of station

The Swords Express Route 500, 503 and 507 serves the Glen Ellen Road to the south of the station, with services every 10-20 minutes during peak hours, and every 30 minutes for the remainder of the day, towards Dublin City Centre. These are the existing bus stops and existing bus services.

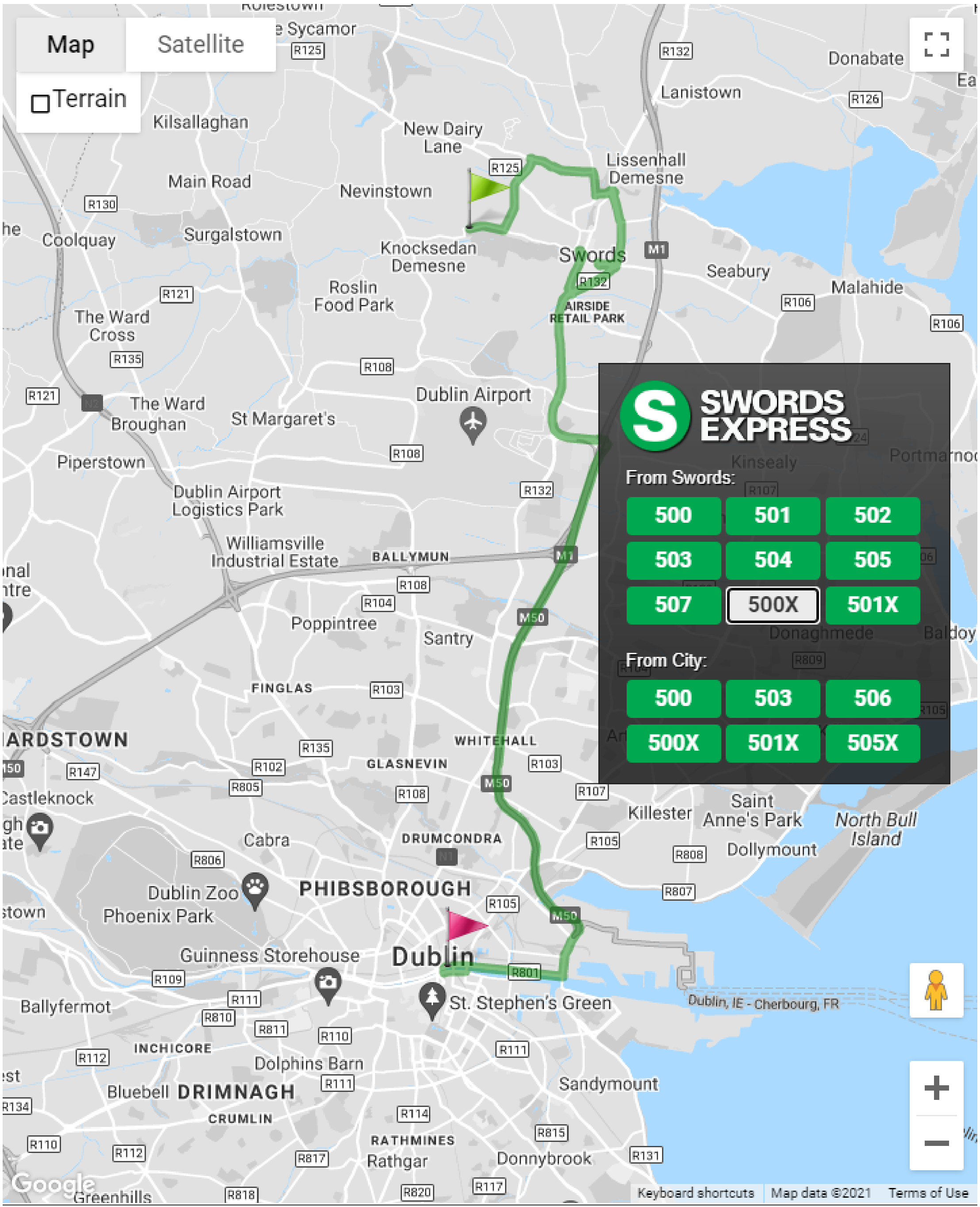


Figure 3.3: Swords Express Routes (www.swordsexpress.com)

3.2 Future Receiving Environment- Public Transport

The Estuary Station and Park and Ride is also located in close proximity to the Bus Network Redesign proposed L83 and L85 local routes from Swords to Dublin Airport, as shown in Figure 3.4. Routes L83 and L85 will have a frequency of 15 minutes both on weekdays and weekends. On weekends, the service will only run every 30 minutes between 6am and 9am on Saturdays and between 8am and 10am on Sundays. Every night, the service will run every 30 minutes between 11pm and 12am and will not operate overnight.

(Base Source: www.busconnects.ie)

Figure 3.4: Proposed Bus Connects network around Estuary Station and Park and Ride

3.3 Existing Road Network

Figure 3.5 illustrates the road network surrounding Estuary Station. The road network in the vicinity of Estuary Station and the Park and Ride comprises of the R132 to the immediate east and Ennis Lane to the south. As part of the strategic road network, the M1 can be accessed via the R132 and Lissenhall Junction, located approximately 500m to the north of the station. The M1 links Dublin to Belfast, and TII traffic counters to the north of Junction 4 (Lissenhall/Donabate) and Junction 5 (Balbriggan South) indicate an average daily flow of approximately 60,000 vehicles in 2019 (pre-COVID levels). The M1 Junction 4 at Lissenhall comprises of a complex roundabout to the north (hybrid with signalised elements) and a hamburger roundabout to the south (with through-road).

In the vicinity of the station, the R132 is a two-way dual carriageway. Ennis Lane is a two-way single carriageway, with no bus lane or cycle lane present, however a footway is present on one side of the road, which is approximately 4m in width.

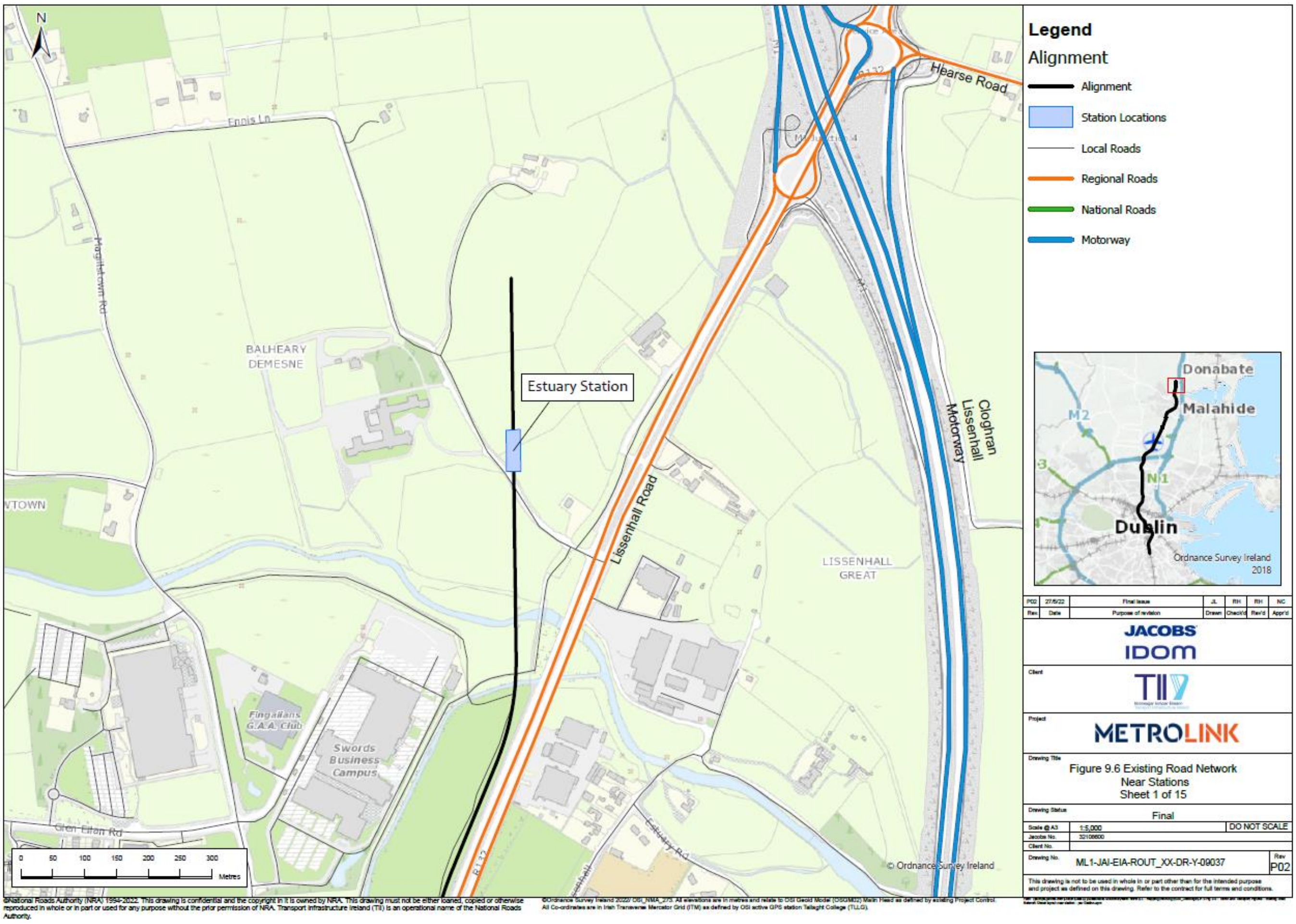


Figure 3.5: Existing Road Network at Estuary Station

3.3.1 Junction Turning Count Locations

The Data Collection Report (ML1-JAI-TRA-ROUT_XX-RP-Y-00023) details the methodology and specification of traffic surveys undertaken for the Project. The survey locations relevant to Estuary Station are shown in Table 3.1. Vehicle classifications used for the survey were Car, LGV, OGV1, OGV2, PSV, Motorcycle and Pedal Cycle. PCU values were also reported using appropriate conversion factors for each vehicle classification. The resulting PCU values from the survey results have been used for the LinSig modelling. All modelled flows are demand flows and have been obtained from the Junction Turning Counts and typical queue data from Google Traffic.

Table 3.1: Survey Locations Around Estuary Station

Junction	Type of Survey
Lissenhall M1 NW	Classified Junction Turning Counts (CJTC)
Lissenhall M1 South	CJTC

3.3.2 Base Traffic Flows

The 2018 base traffic flows for the AM and PM peak periods, for the junctions detailed in Table 3.1, are provided within Appendix A Traffic Flow Diagrams.

Table 3.2 below summarises the 2018 AM and PM Peak results for the M1 Junction 4 Lissenhall Junction.

Table 3.2: LinSig Model Result Summary – M1 Junction 4 Lissenhall Junction – 2018 Observed Flows

Lane Description	Movement	Weekday AM Peak		Weekday PM Peak	
		Degree of Saturation [%]	Mean Max Queue [PCU]	Degree of Saturation [%]	Mean Max Queue [PCU]
J1: M1-R132-R126 Lissenhall Junction (South)					
M1 Northbound Off Ramp	Ahead Left	87.50	12.2	85.10	20.1
	Ahead	85.30	11.5	85.90	22.2
R132 Northbound	Left Ahead	20.80	2.4	85.20	16.6
	Ahead	52.50	10.5	84.50	18.1
R132 Southbound	Right Ahead	51.90	8.6	53.60	5.2
	Ahead	39.40	12.3	37.80	7.5
	Ahead	37.50	11.5	31.70	6
J2: M1-R132-R126 Lissenhall Junction (North)					
R132 Swords Road Southbound	Ahead Left	56.70	11.6	48.90	6.9
	Ahead	58.60	13.2	51.50	7.9
	Ahead	55.10	11.1	49.30	7
R126 Hearse Road	Left	63.10	6.9	38.90	6.1
M1 Southbound Off Ramp	Right Ahead Left	86.90	22.1	83.10	10.4
R132 Northbound	Ahead	70.40	15.5	79.80	21.4
	Right Ahead	58.50	4.4	64.30	2.2

The results show that the existing Lissenhall Junction operates within capacity in both the Weekday AM and PM peak hours. Maximum queue of 22 pcus (127m) was predicted on the M1 Southbound Off Ramp in the Weekday AM peak hour and on the M1 Northbound Off Ramp in the Weekday PM peak hour.

3.3.3 Forecast Traffic Flows

Forecast traffic growth rates have been obtained from the Eastern Regional Model (ERM) for future years 2035, 2050 and 2065, for the appropriate scenario.

3.4 Future Receiving Environment – Road Network

The Donabate Distributor Road opened as of March 2020, running in an easterly direction from the R126 Hearse Road on the south-west of Donabate village, across the Dublin-Belfast railway line, before heading in a northerly direction to reconnect with the R126 on the Portrane Road. The new 4km road will alleviate traffic at Donabate village and provide alternative access to Portrane and the eastern parts of Donabate. Footpaths and off-road cycle facilities are also included along the extents of the road.

The Swords Western Relief Road (SWRR) is an objective of the Fingal Development Plan 2017-2023, which is proposed to connect the R132 north of the M1 Lissenhall junction and proceeds for approximately 9km through rural Fingal to the N2 north of the M50. The SWRR 'could remove significant volumes of traffic from the Swords Town Centre area, as well as serving strategic traffic between the M1 and M2/M50 corridors.' It could also 'serve the proposed strategic park and ride, minimising the amount of traffic utilising limited carrying capacity on the existing and proposed local road network in Swords.'

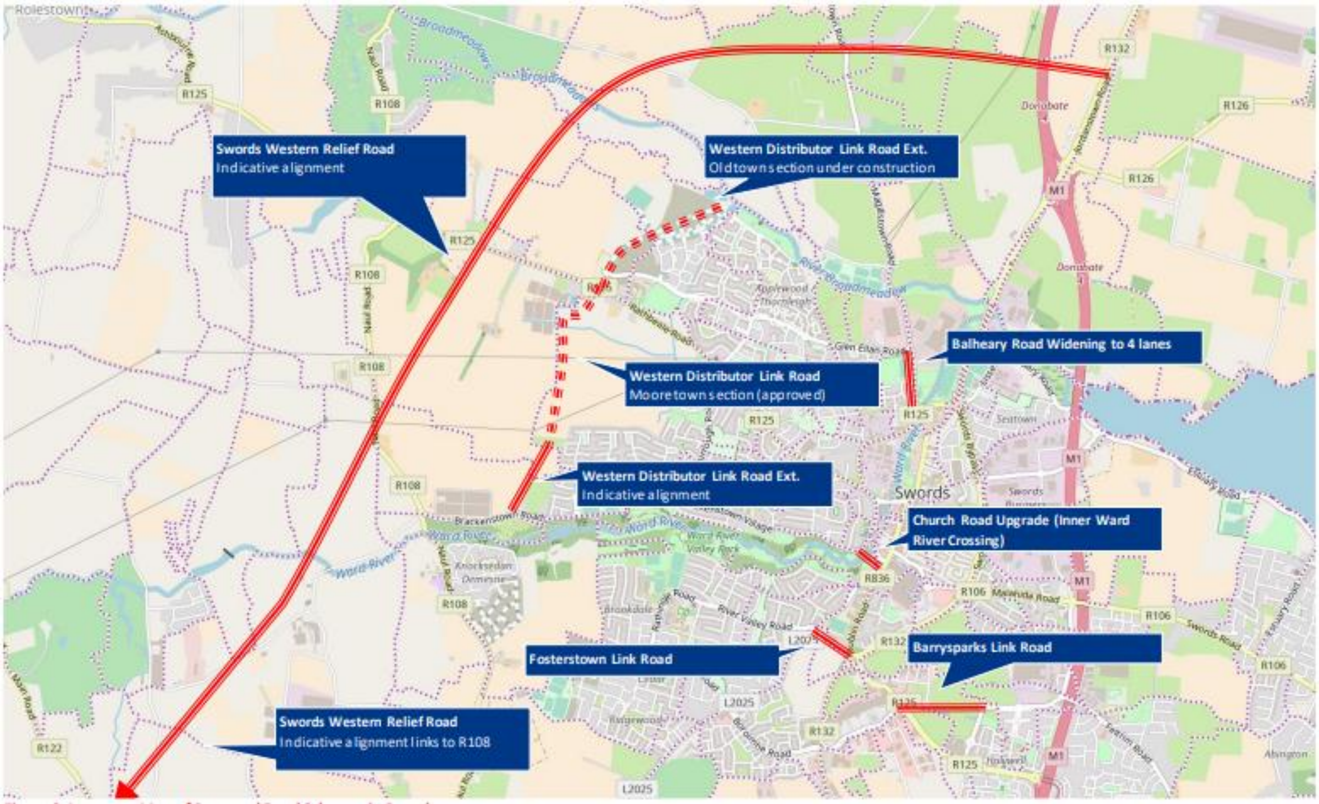


Figure 3.6: Indicative Alignment of Swords Western Relief Road (South Fingal Transport Study – Swords Sub Report)

Fingal County Council, in conjunction with the National Transport Authority, seeks to improve connectivity for pedestrians and cyclists along the R132 by implementing signalised junctions at the current Malahide Road Roundabout, Seatown Road Roundabout and Estuary Roundabout, this scheme is referred to as the R132 Connectivity Project.

3.5 Existing Pedestrian Network

At M1 Lissenhall Junction, there is an existing pedestrian underpass connecting the R132 (north and south of the junction) and the R126. However, south of the junction there are no further pedestrian facilities along the R132 as far as Estuary Roundabout.

At Estuary Roundabout (R125 Roundabout), there is a pedestrian overpass provided from the R125 to Seatown West over the R132, south of the proposed station. Only the R125 arm of the roundabout has a pedestrian crossing, which is set back from the junction by approximately 50m. The R125 is considered to have a high sensitivity due to its presence near Swords town centre and the surrounding residential area.

3.5.1 Pedestrian Link Counts

The Data Collection report (ML1-JAI-TRA-ROUT_XX-RP-Y-00023) details the locations around Estuary Station where pedestrian surveys were undertaken.

3.5.2 Baseline Pedestrian Accessibility Review

A baseline accessibility assessment has been undertaken to establish existing walking provision relevant to the proposed Estuary Station and Park & Ride. Catchment maps prepared for the accessibility analysis for walking are based on two criteria, the average speed for each mode and the existing road network. Therefore, maps do not reflect existing access restrictions for private roads and motorised roads.

Figure 3.7 illustrates a 5-minute, 10-minute and 15-minute walking catchment from the Estuary Station and Park and Ride. The figure shows that at present there are limited facilities within the walking catchment of the station (using formal pedestrian routes on the existing road network), as a result of the limited pedestrian infrastructure in the area. A baseline pedestrian comfort assessment has not been undertaken at this location as there no pedestrian footways at this section of the R132. Survey data was not collected in close proximity to Ennis Lane, however due to the limited nearby facilities, it is has been assumed that pedestrian demand is very low on this link.

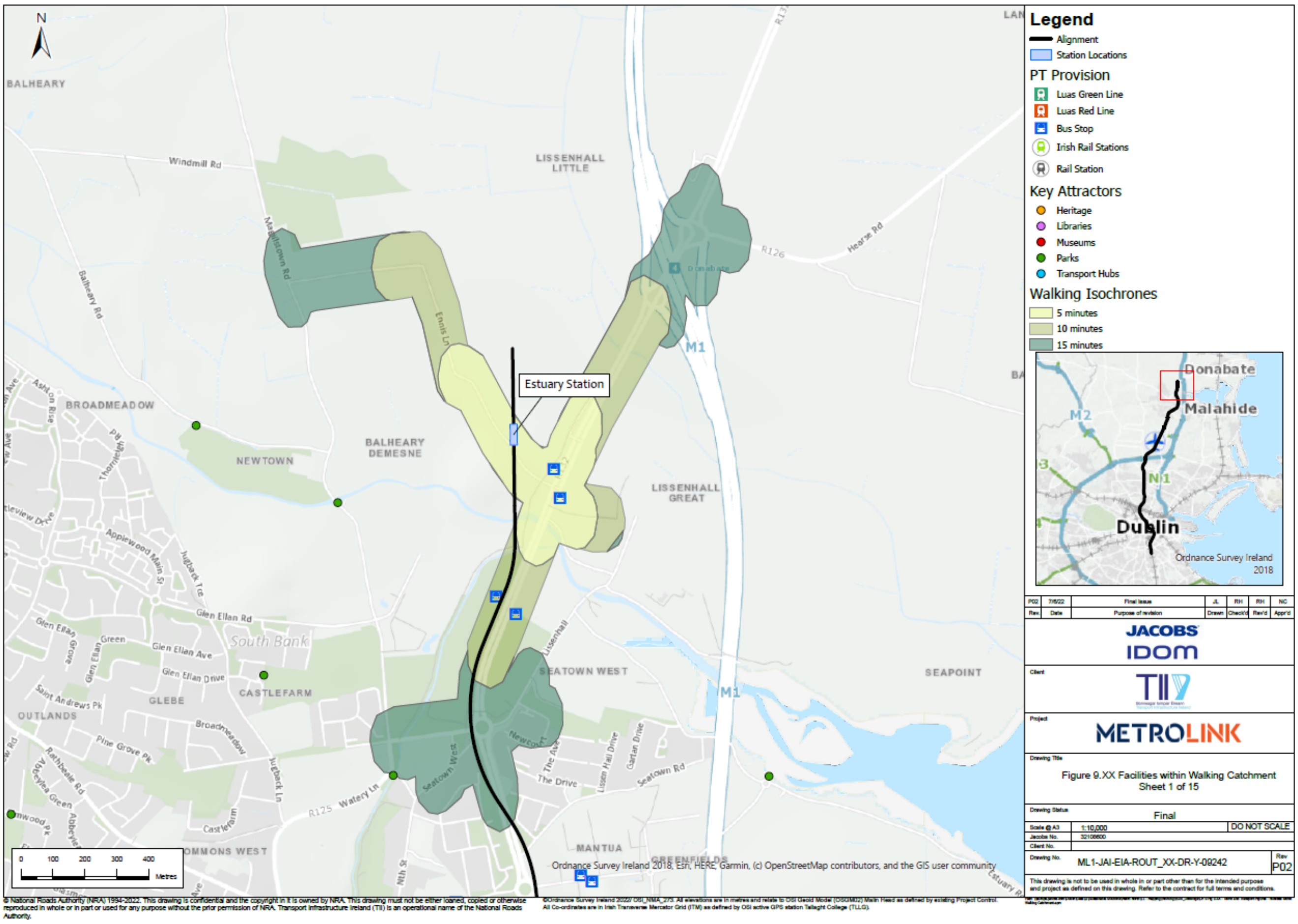


Figure 3.7: Estuary Station and Park and Ride Walking Catchment

3.6 Future Receiving Environment - Pedestrian Network

Accessibility in the Ward River area will be improved in the future with the development of the Swords Western Distributor Road (SWDR), which will form a spine of access to both Oldtown and Mooretown. The SWDR will 'comprise a safe and attractive pedestrian/cyclist green corridor to facilitate access to the Ward River Valley Park, thereby ensuring connectivity to the wider green network of open spaces' (South Fingal Transport Study- Swords Sub Report, 2019, p17).

The lands to the south-west of the station, between Glen Ellan Road and Balheary Road, are zoned for development under the Estuary West Masterplan. It is envisaged that 'Estuary West will become a vibrant residential and mixed-use community, with active and friendly streetscapes', including a proposal for a pedestrian/cyclist connection between the lands and Estuary Station. This will improve permeability along and across the Broadmeadow River.

When the R132 Connectivity Project is implemented, there will be improved pedestrian connections across the R132 through the realignment of the existing roundabouts to signalised junctions, including the provision of pedestrian crossings.

3.7 Existing Cycle Network

Figure 3.8 illustrates Estuary Station within the GDA Cycle Network. The section of the R132 in the vicinity of Estuary Station is designated as an Inter-Urban Route within the GDA Cycle Network. From Donabate to Estuary Station there are no specific cycling provisions along the extents of the route, however there is an on-road shared bus lane both northbound to and southbound from Lissenhall Junction. These provisions have a Level C Quality of Service.

Off-road cycle paths are present along the Donabate Distributor Road as far as Hearse Road / R126.

Cyclists travelling along the R126 from Donabate to Lissenhall exit the road at the M1 Lissenhall junction and follow walking / cycling underpass from the R126 to R132.

North Swords to Estuary Station along R125 / R132 has on-road cycling provisions. These provisions have a Level C Quality of Service.

There are limited cycle facilities in this section, however bus lanes are present on the R132 Swords Bypass offering a shared use provision with up to a Level B Quality of Service. The provisions in this section range in significance and sensitivity (from low to high) due to the proximity to Swords Town Centre and a number of industrial estates.

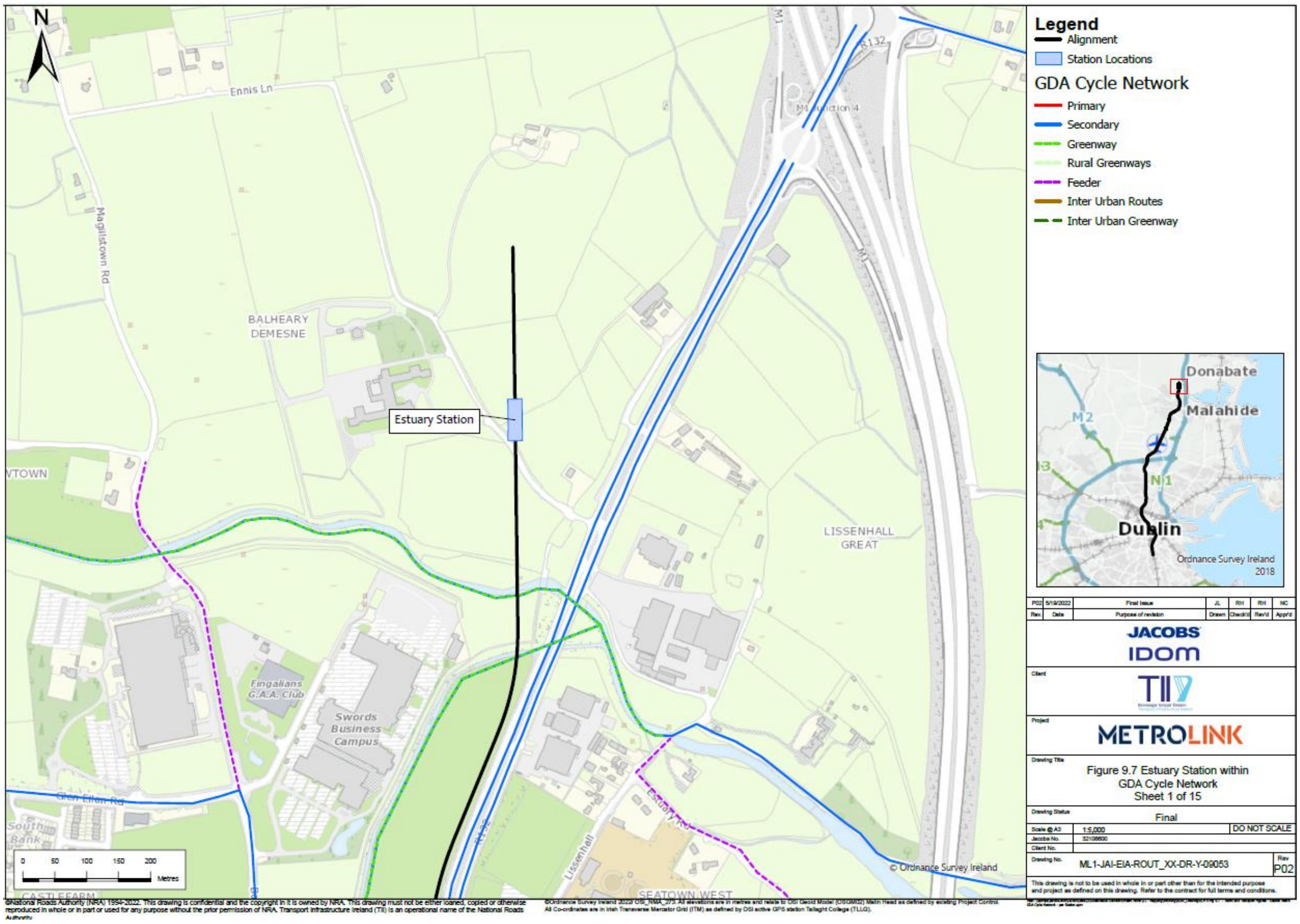


Figure 3.8: Estuary Station within GDA Cycle Network

3.7.1 Baseline Cycle Accessibility Review

A baseline accessibility assessment has been undertaken to establish existing cycling provision relevant to the proposed Estuary Station and Park & Ride. Catchment maps prepared for the accessibility analysis for cycling are based on two criteria, the average speed for each mode and the existing road network. Therefore, maps do not reflect existing access restrictions for private roads and motorised roads.

Figure 3.9 illustrates a 5-minute cycling and 10-minute cycling catchment from the Estuary Station and Park and Ride, and the location of existing bike racks and Dublin Bike stations in close proximity to the station. The figure shows that much of Swords North Street and the surrounding residential areas are accessible within a 10-minute cycle from the proposed Estuary Station.

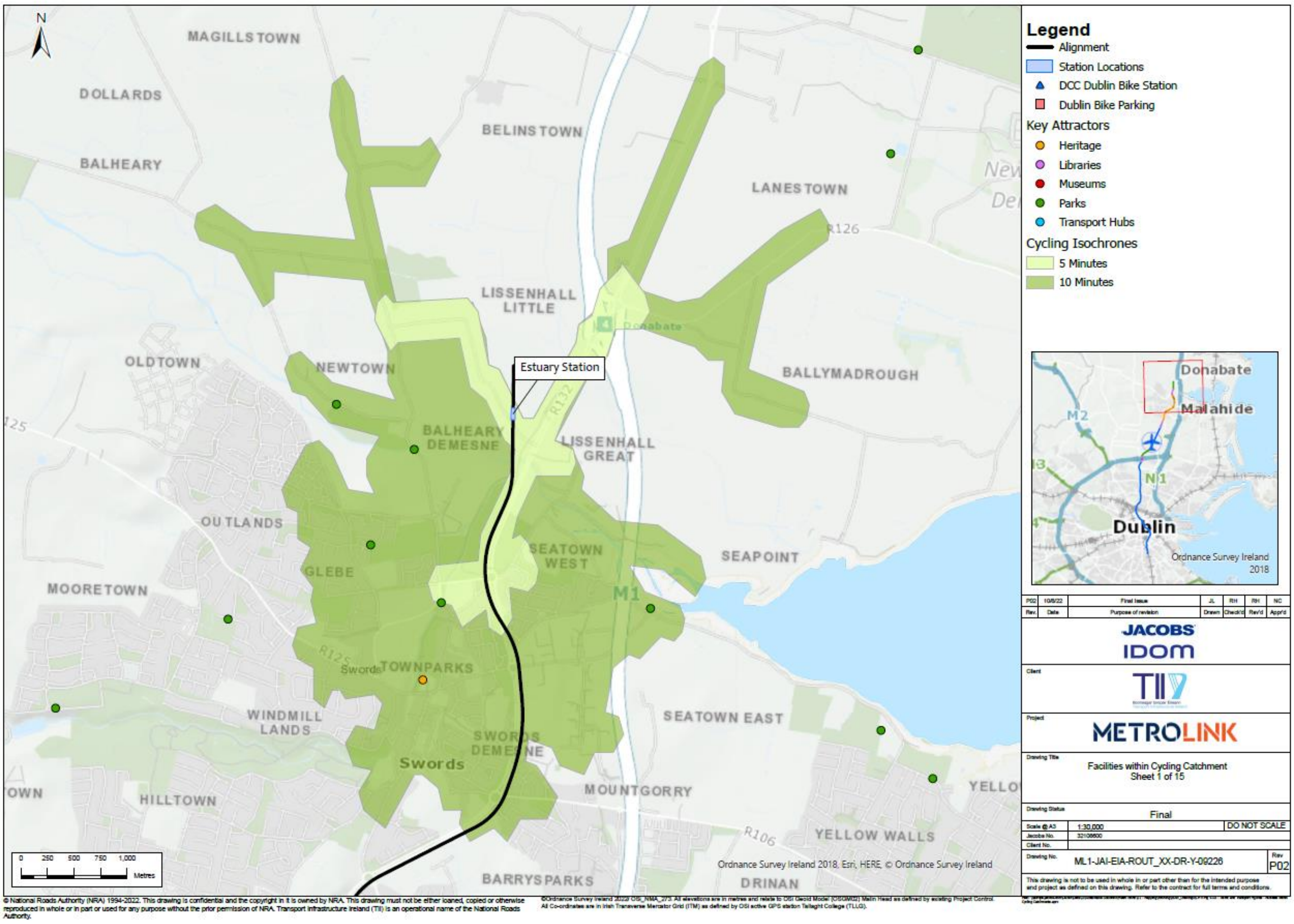


Figure 3.9: Estuary Station and Park and Ride Cycling Catchment

Table 3.3 below details the local facilities and amenities within the cycling catchments around Estuary Station.

Table 3.3: Local facilities and amenities within cycling catchment area

Facilities within 5min cycling	Facilities within 10min cycling
Seatown Park	Swords Business Park
Fingallians GAA Club	Fingal County Council
	Swords Castle
	St. Colmcille’s Girls National Catholic School
	St. Colmcille’s Catholic Church

3.8 Future Receiving Environment – Cycle Network

Improvements to the cycling network as part of the development of the Swords Western Distributor Road and the Estuary West Plan have been noted in section 3.6 Future Receiving Environment – Pedestrian Network.

As part of the R132 Connectivity Project, the change of the existing roundabouts to signalised junctions will provide for designated cycle lanes and cycle crossings, improving connectivity across the R132.

4. The Proposed Project – Estuary Station and Park and Ride

4.1 Site Location and Development Context

The proposed Park and Ride and Estuary Station is located at the northern end of the proposed project 500m approximately from Junction 4 (Lissenhall) on the M1 motorway. The proposed station, as shown in Figure 4.1 is bound to the east by the R132 and Ennis Lane to the west and south. In the Operational phase of the Project, the proposed Swords Western Distributor Road will be present to the north of the proposed station.

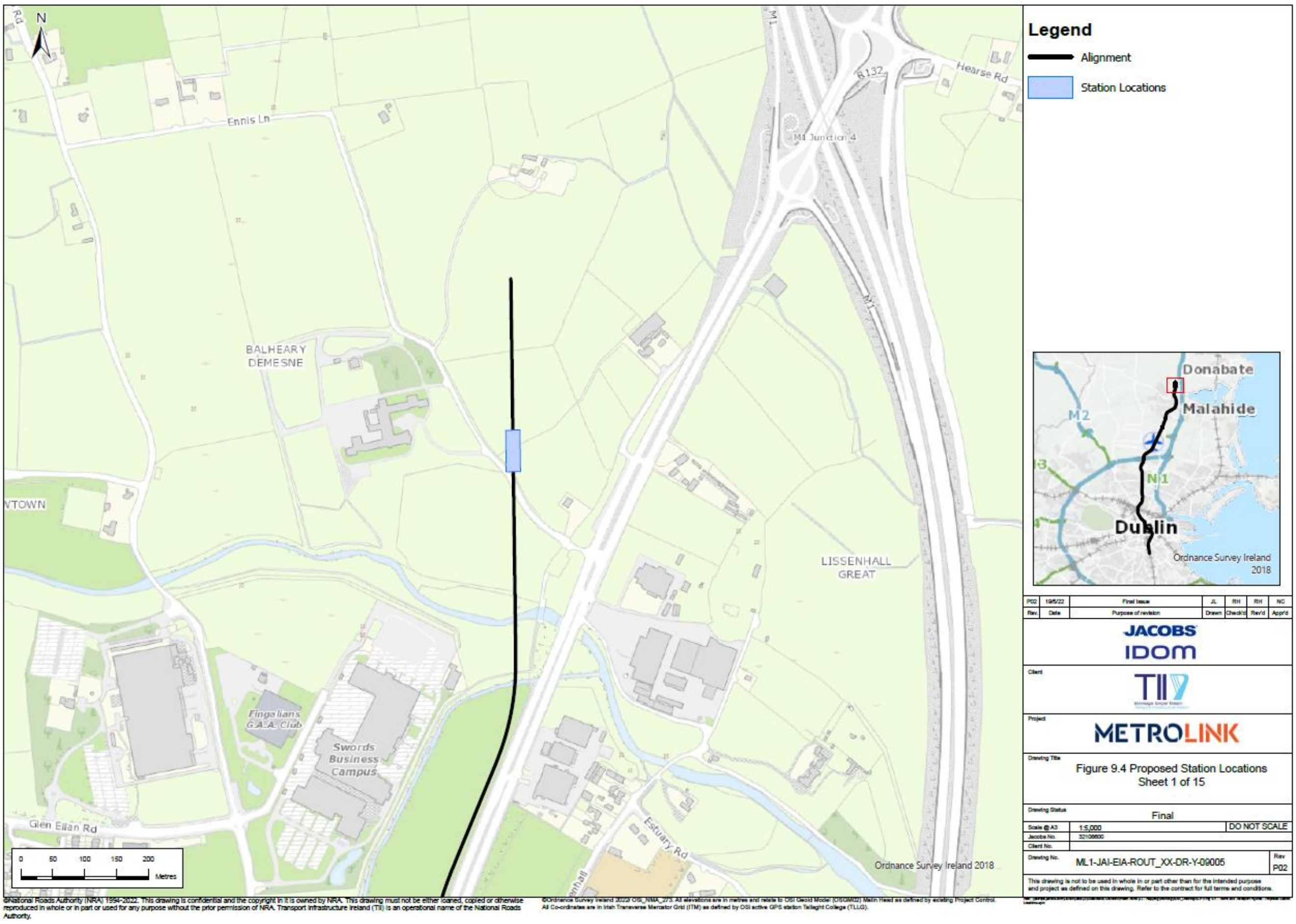


Figure 4.1: Proposed Estuary Station Location

Vehicular access to the Park & Ride and Estuary Station during the operational phase will be via the R132 and the proposed Swords Western Distributor Road (SWDR).

Estuary Station is a proposed multi-storey Park & Ride site. The Park and Ride facility will be located close to Junction 4 (Lissenhall) of the M1 motorway, which will capture demand into the city from the north of Dublin. The M1 links Dublin to Belfast, and TII traffic counters to the north of Junction 4 (Lissenhall/Donabate) and Junction 5 (Balbriggan South) indicate an average daily flow of approximately 60,000 vehicles in 2019 (pre-COVID levels).

The proposed design includes for 3,051 multi-storey car parking spaces (EIAR Volume 2 Chapter 6 MetroLink Operational Phase). A breakdown of the car parking spaces proposed is contained within Table 4.1. In addition to this, it is proposed to provide 254 bicycle spaces.

Table 4.1: Parking Space Breakdown

	Type of parking space	Typ. Size	Number of spaces
1	Wheelchair accessible parking spaces	2.4 x 5 m plus (min) 1.2m marked access zone to rear and side of designated parking space clear of driving aisle	208 In accordance with the guideline: Building for Everyone A Universal Design Approach: 6% of total capacity, BS8300:2018 and TGD part M (at least 5% of total number of spaces)
2	Staff parking spaces	2.4 x 5 m	10 Close to office with restricted access
3	E-car charging spaces	2.4 x 5 m	694 Facility for charging Electric Cars. Assumed 600 spaces with battery charging option.
4	Standard Parking Spaces	2.4 x 5 m	2,139 Standard parking spaces
5	**Total car parking spaces**	**2.4 x 5 m**	**3051**

The proposed design will allow for phasing of the construction works which allows for expansion in line with increasing demand. The proposed Park and Ride building is subdivided into three volumes with independent access. Expanding parking capacity can be done without impacting operation of the volume already constructed.

Figure 4.2 illustrates the proposed street level layout for Estuary Station and Park and Ride including pedestrian crossings, location of entrances and exits, park and ride bays, and bike parking area. The station platforms can be accessed via stairs to the east and west of the station, as well as two lifts, one on each platform, providing access to the Park and Ride building.

The main approach for vehicles to the car park will be from the southeast and the north. There will also be a pedestrian route and two-way cycle path to the east of the station.

The station also provides for bus interchange, a taxi rank, kiss and ride drop-off spaces and cycle parking. There are two entrances to the Park and Ride site, one directly from the R132 and one from the Swords Western Distributor Road to the north-east of the proposed station. The Swords Western Distributor Road will in turn connect to the R132.

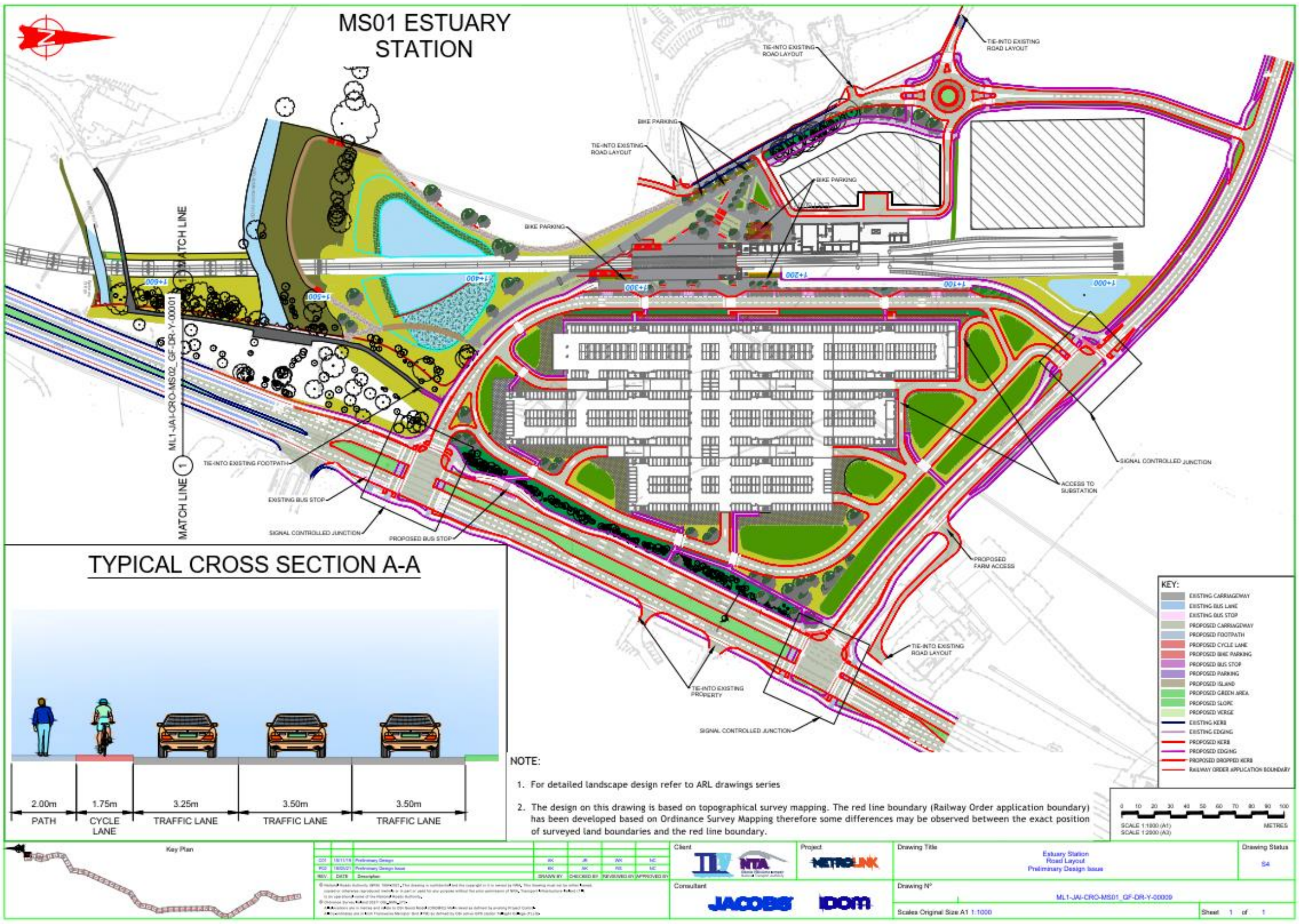


Figure 4.2: Estuary Station and Park and Ride Road Street Level Plan

5. Trip Generation / Trip Attraction

5.1 Operational Phase

Traffic estimates associated with the Estuary Station operational phase have been established utilising the National Transport Authority's (NTA) East Regional Model (ERM). The ERM provides a comprehensive representation of multi-modal travel patterns across the Greater Dublin Area and is a suitable tool for the assessment and appraisal of the proposed Project.

5.1.1 Passenger Boarding and Alighting

Passenger demand modelling has been used to predict the numbers of passengers boarding and alighting at each station, and the resulting passenger load on MetroLink, for the years 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). The scenarios considered for assessment for each of the years 2035, 2050 and 2065 are outlined in Table 5.1.

Table 5.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project
Do Minimum Scenario	Committed transport schemes in the absence of the Project
Do Something - Scenario A	Scenario with the Project and committed transport schemes only
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for Opening year (2035) and planned schemes under the Transport Strategy for the GDA for the Design Year (2050) and the Forecast Year (2065)

5.1.1.1 Boarding and Alighting Volumes

Table 5.2 to Table 5.9 show boarding, alighting and interchange numbers for the Estuary Station at different peak periods. All data has been retrieved from the East Regional Model (ERM) developed by the National Transport Authority (NTA). Data in this section was obtained for the busiest hour within each of the following peak periods:

- AM: busiest hour between 07:00 – 10:00;
- LT (lunch time): busiest hour between 10:00 – 13:00;
- SR (school run): busiest hour between 13:00 – 16:00; and,
- PM: busiest hour between 16:00 – 19:00.

Figure 5.1 presents the volume of boarding and alighting passengers at Estuary Station over the 12hr peak period (07:00-19:00) in both Scenario A and Scenario B. Scenario A has the highest volume of both boarding and alighting passengers, reaching approximately 10,300 boarding passengers, and 10,200 alighting passengers in 2065, compared to almost 7,800 boarding passengers and 6,300 alighting passengers in Scenario B.

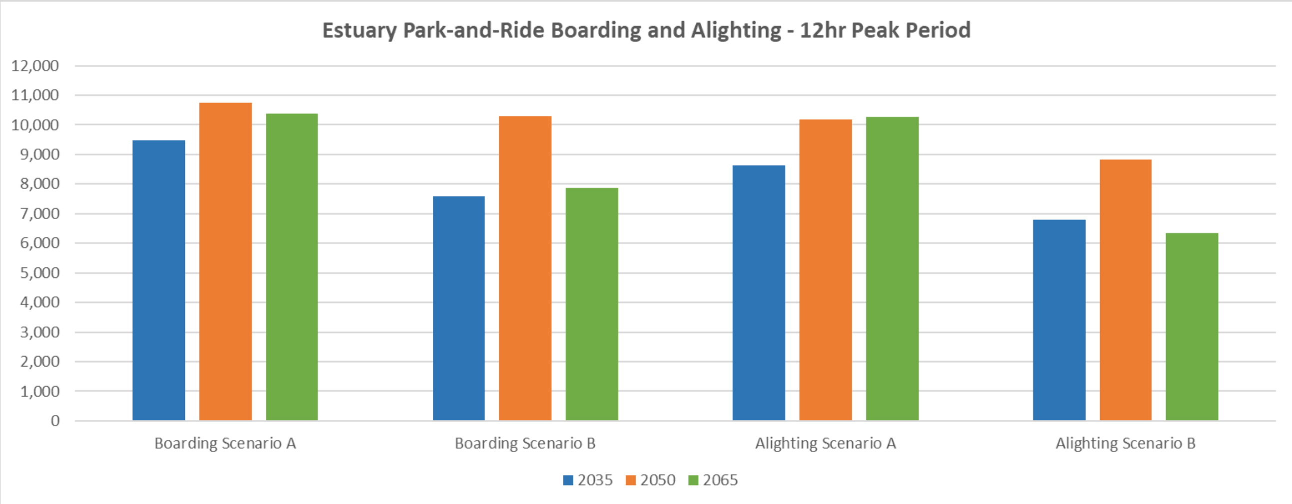


Figure 5.1: Estuary 12hr Boarding and Alighting in Scenario A and Scenario B

5.1.1.2 Boarding and Alighting Volumes: Scenario A

Table 5.2 to Table 5.4 below highlight the boarding and alighting passenger numbers for Estuary Station in Scenario A.

For the Opening Year, 2035, during the AM peak hour 2,433 passengers are expected to board the MetroLink vehicles at Estuary Station and head south, with 151 northbound passengers alighting. During the PM peak hour, 2,006 passengers are expected to alight the MetroLink vehicles at Estuary Station and head north, with 603 southbound passengers boarding.

Table 5.2: Boarding and Alighting Numbers at Estuary Station in 2035 Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	0	151	0	0	407	0	0	781	0	0	2,006	0
Southbound	2,433	0	2,433	433	0	433	537	0	537	603	0	603

Source: East Regional Model (ERM)

For the year 2050, during the AM peak hour, 2,307 passengers are expected to board the MetroLink vehicles and head south, with 165 northbound passengers alighting. During the PM peak hour, 772 passengers will board the MetroLink vehicles and head south, with 2,500 northbound passengers alighting.

Table 5.3: Boarding and Alighting Numbers at Estuary Station in 2050 Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	0	165	0	0	650	0	0	631	0	0	2,500	0
Southbound	2,307	0	2,307	959	0	959	391	0	391	772	0	772

Source: East Regional Model (ERM)

For the year 2065, during the AM peak hour, 2,342 passengers are expected to board the MetroLink vehicles and head south. 194 northbound passengers are expected to alight. During the PM peak hour, 1,134 passengers are expected to board and head south, while 3,028 northbound passengers will alight.

Table 5.4: Boarding and Alighting Numbers at Estuary Station in 2065 Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	0	194	0	0	351	0	0	473	0	0	3,028	0
Southbound	2,342	0	2,342	336	0	336	552	0	552	1,134	0	1,134

Source: East Regional Model (ERM)

5.1.1.3 Boarding and Alighting Volumes: Scenario B

Table 5.5 to Table 5.7 below highlight the boarding and alighting passenger numbers for Estuary Station in Scenario B.

For the year 2035, during the AM peak, 1,667 passengers will board the MetroLink vehicles and head south, with 106 northbound passengers alighting. During the PM peak hour, 313 southbound passengers are expected to board while 1,031 northbound passengers will alight.

Table 5.5: Boarding and Alighting Numbers at Estuary Station in 2035 Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	0	106	0	0	450	0	0	1,004	0	0	1,031	0
Southbound	1,667	0	1,667	673	0	673	470	0	470	313	0	313

Source: East Regional Model (ERM)

During the 2050 AM peak, 1,803 passengers are expected to board the MetroLink vehicles at Estuary Station while 89 northbound passengers will alight. During the PM peak, 847 southbound passengers are expected to board, and 2,502 northbound passengers are predicted to alight.

Table 5.6: Boarding and Alighting Numbers at Estuary Station in 2050 Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	0	89	0	0	470	0	0	379	0	0	2,502	0
Southbound	1,803	0	1,803	1,046	0	1,046	469	0	469	847	0	847

Source: East Regional Model (ERM)

During the 2065 AM peak, 2,320 passengers are expected to board the MetroLink vehicles at Estuary Station and head south and 143 northbound passengers are expected to alight. During the PM peak hour, 131 southbound passengers are expected to board while 717 northbound passengers will alight.

Table 5.7: Boarding and Alighting Numbers at Estuary Station in 2065 Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	0	143	0	0	583	0	0	956	0	0	717	0
Southbound	2,320	0	2,320	655	0	655	228	0	228	131	0	131

Source: East Regional Model (ERM)

5.1.1.4 Public Transport Interchange Volumes

As part of the Bus Network Redesign proposals, Estuary Station and Park and Ride will be served by local routes L83 and L85. More information on the future public transport network around the station can be found in Section 3.2 of this document.

Table 5.8 and Table 5.9 present the volume of passengers transferring to and from the Project with other public transport modes in Scenario A and Scenario B AM and PM peak hours. The majority of passengers will originate from, or have final destinations in, the surrounding zones, however there is significant interchange with the bus network.

Table 5.8: Transfers To/From Other Public Transport Modes in Scenario A

Scenario A									
Year	Peak	Boarding				Alighting			
		First Boarding	From Bus	From Rail/DART	From Luas	Final Stop	To Bus	To Rail/DART	To Luas
2035	AM	1,657	775	-	-	82	70	-	-
	PM	496	107	-	-	1,695	311	-	-
2050	AM	1,664	644	-	-	86	80	-	-
	PM	658	114	-	-	2,203	297	-	-
2065	AM	1,714	628	-	-	98	96	-	-
	PM	1,006	128	-	-	2,656	372	-	-

Source: East Regional Model (ERM)

Table 5.9: Transfers To/From Other Public Transport Modes in Scenario B

Scenario B									
Year	Peak	Boarding				Alighting			
		First Boarding	From Bus	From Rail/DART	From Luas	Final Stop	To Bus	To Rail/DART	To Luas
2035	AM	1,268	399	-	-	74	32	-	-
	PM	242	71	-	-	880	151	-	-
2050	AM	1,012	791	-	-	51	38	-	-
	PM	764	83	-	-	2,281	221	-	-
2065	AM	1,546	774	-	-	96	47	-	-
	PM	40	92	-	-	411	306	-	-

Source: East Regional Model (ERM)

5.1.2 Park and Ride

The differences between the Do-Minimum and Do-Something highways demand matrices for Scenario A in 2035 in the AM peak period give information on trips using the Estuary Park and Ride facility. Although some trips come from areas north west of Dundalk the majority come from locations south of Dundalk or Ardee on the M1 and N2 corridors. Areas from Drogheda southwards through Balbriggan, Skerries, Rush, Lusk to Donabate generate most of the car trips to Estuary Park and Ride. These areas also see reductions in car use into Central Dublin locations when MetroLink opens. In the Do-Something Scenario over 1150 cars per hour go to the Estuary Park and Ride, and this reduces southbound flows through Junction 4 on the M1.

6. Assessment of Impacts

6.1 Operational Phase

As part of the assessment of impacts associated with the Operational Phase of the Project, the impact of the proposed Park & Ride and Estuary Station on all modes of transport has been assessed – public transport (PT), vehicular traffic, walking and cycling.

6.1.1 Public Transport Impact Assessment

The future street level design at Estuary Station includes a bus layby to the east of the station, with a pedestrian crossing to the south of the layby facilitating easy interchange between the bus network and the Project. As part of the Bus Network Redesign proposals, Local routes L83 and L85 serve the R132 in proximity to the proposed Estuary Station.

The ERM model has been interrogated in order to estimate the reduction in private car trips associated with the origin and destination trips in the zones around the Estuary Station. In Scenario A, there is a 16% increase in total trip demand between 2035 and 2050, with a further 8% increase from 2050 to 2065. Between the Do Minimum and Do Something scenarios, there is a 13 percentage point increase in PT mode share in 2035. In 2050, there is a 14 percentage point increase in PT mode share and in 2065, there is an increase of 13 percentage points in the PT mode share.

Private car mode share decreases by 6 percentage points in 2035, from 65% in the Do Minimum to 59% in the Do Something scenarios. In 2050, private car mode share decreases by 7 percentage points, and in 2065, private car mode share decreases by 7 percentage points.

The active modes mode share (which includes walking and cycling), reduces by 7 percentage points across 2035 and 2050, and reduces by 6 percentage points in 2060. Whilst end-to-end active mode trips will reduce, there will be an increase in active mode trips to and from the station where passengers will interchange with the Project. Overall, there is a shift towards sustainable travel modes (active modes and PT combined), and a reduction in private car trip demand at Estuary Station.

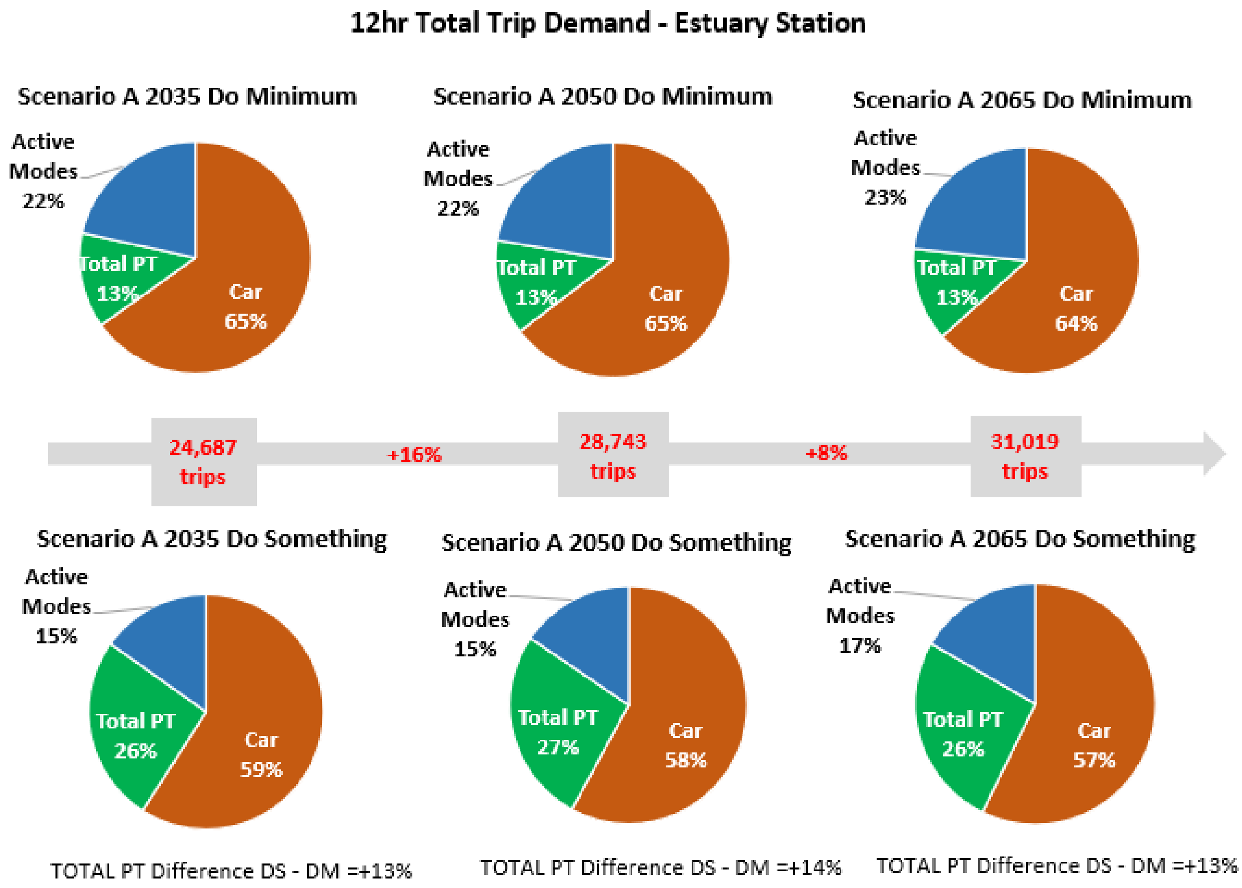


Figure 6.1: Estuary Mode Share – Scenario A

In Scenario B, there is a 17% increase in total trip demand between 2035 and 2050, with a further 2% increase from 2050 to 2065. Between the Do Minimum and Do Something scenarios, there is a 12 percentage point increase in PT mode share in 2035. In 2050, there is an increase of 13 percentage points in the PT mode share and in 2060, there is an increase of 11 percentage points in the PT mode share.

Private car mode share decreases by 6 percentage points in 2035, from 66% in the Do Minimum to 60% in the Do Something scenarios. In 2050, private car mode share decreases by 6 percentage points and in 2065, private car mode share decreases by 5 percentage points.

The active modes mode share (which includes walking and cycling), reduces by 6 percentage points in 2035, 7 percentage points in 2050 and 6 percentage points in 2065. Whilst end-to-end active mode trips will reduce, there will be an increase in active mode trips to and from the station where passengers will interchange with the Project. Overall, there is a shift towards sustainable travel modes (active modes and PT combined), and a reduction in private car trip demand at Estuary Station.

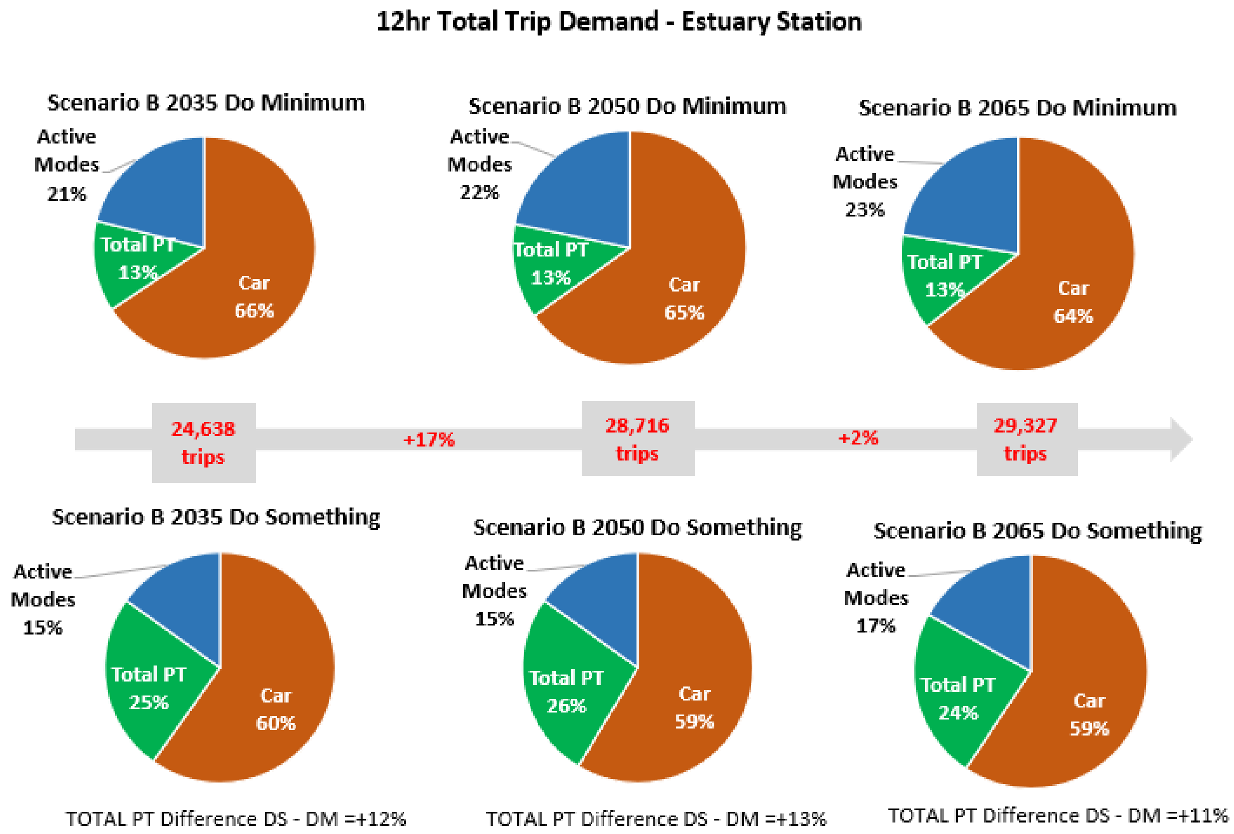


Figure 6.2: Estuary Mode Share – Scenario B

Figure 6.3 presents the changes in public transport mode share in the Scenario A 2065 AM peak hour, with Figure 6.4 presenting the same for Scenario B 2065. Overall, the majority of zones surrounding Estuary Station see an increase in PT (including the Project) mode share, with an increase of up to 40 percentage points in the zone surrounding Estuary Station in 2035, 2050 and 2065. Zones to the south of Estuary Station see increases in PT (including MetroLink) mode share of up to 20 percentage points to the east of the alignment and 5 percentage points to the west of the alignment.

In Scenario B, the majority of zones surrounding Estuary Station see an increase in PT (including the Project) mode share, with an increase of up to 40 percentage points in the zone surrounding Estuary Station in 2035, 2050 and 2065. Zones to the south of Estuary Station see increases in PT (including MetroLink) mode share of up to 20 percentage points to the east of the alignment and 5 percentage points to the west of the alignment.

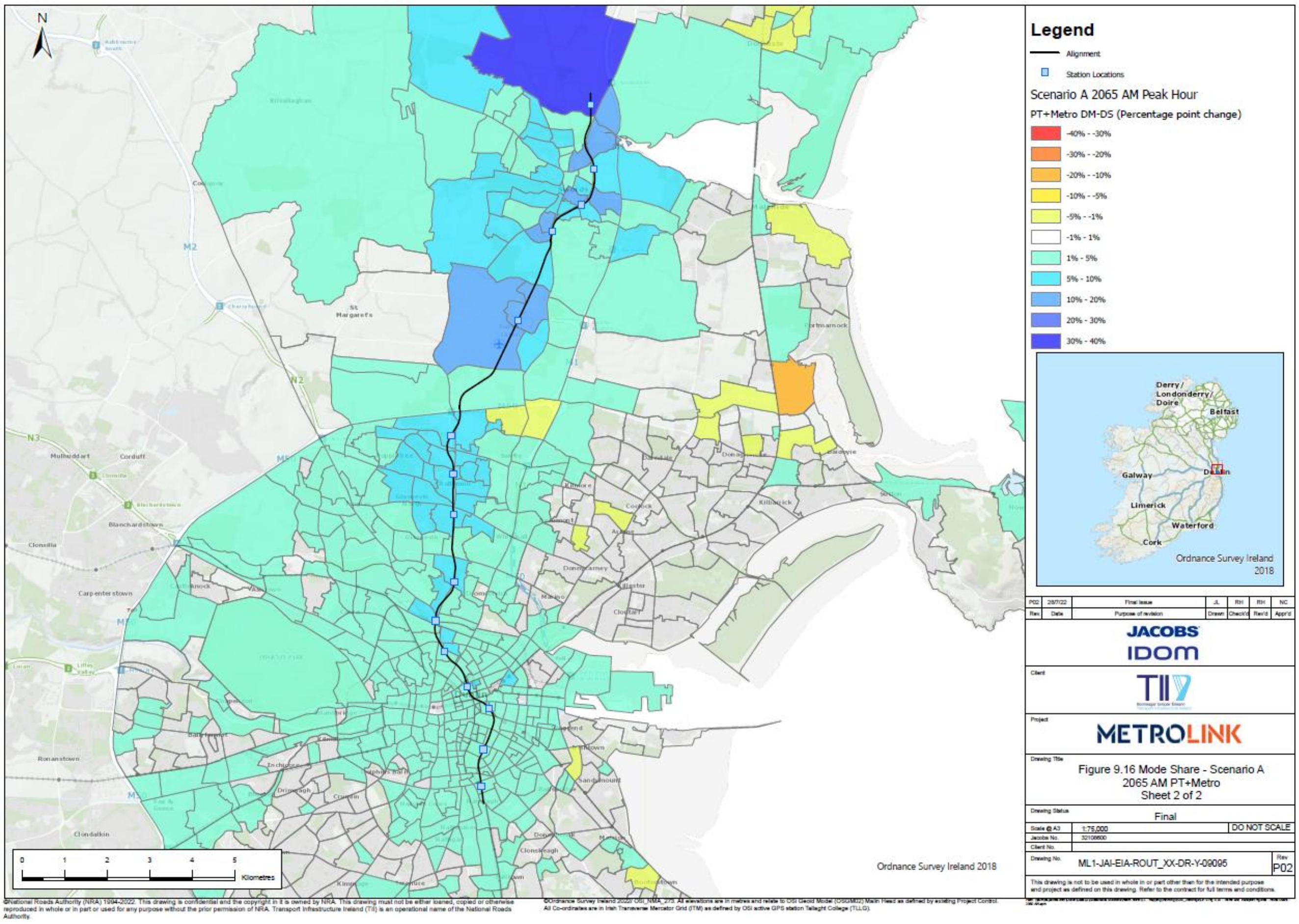


Figure 6.3: Changes in Public Transport Mode Share (including the Project) in Scenario A 2065 AM Peak Hour

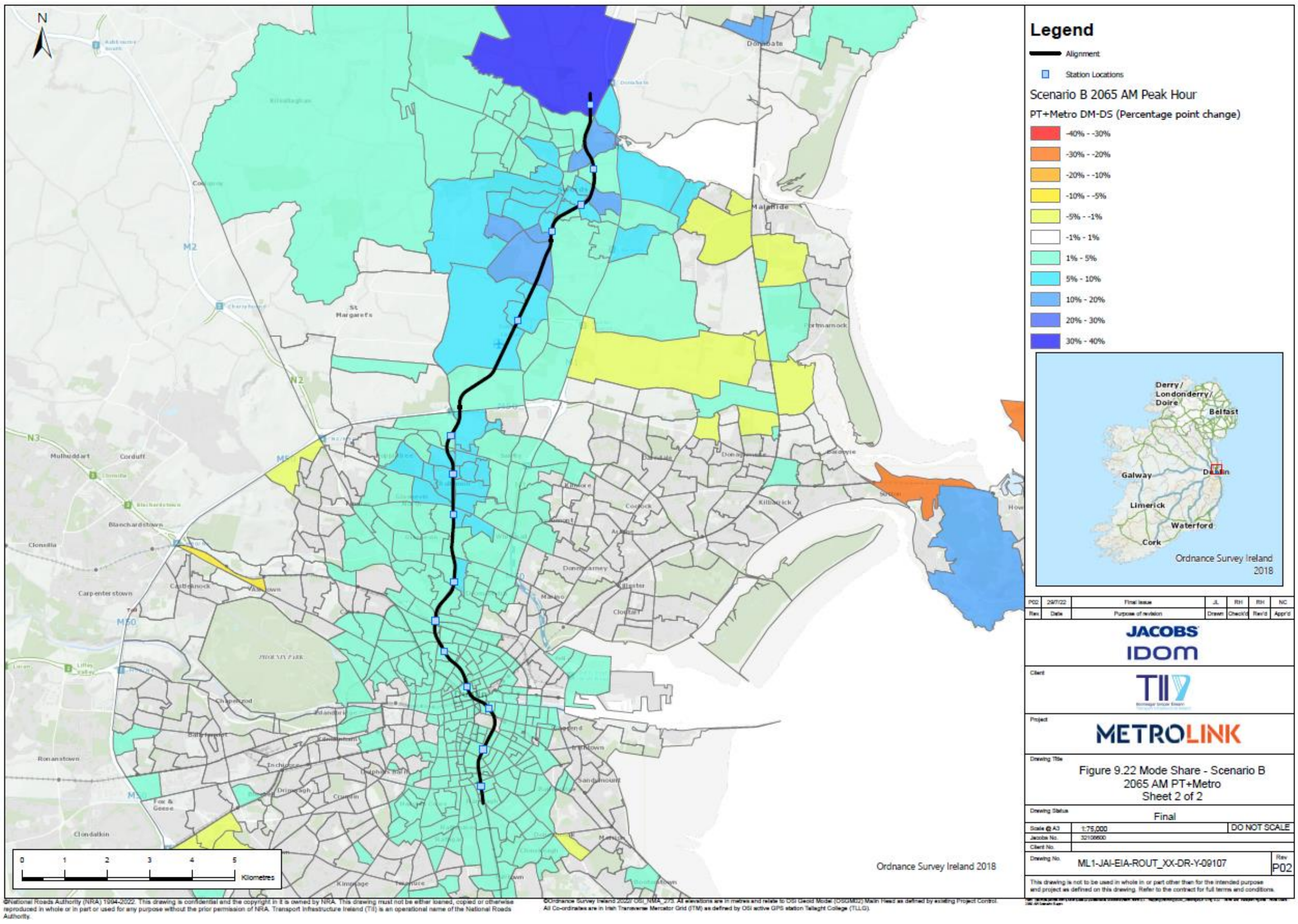


Figure 6.4: Changes in Public Transport Mode Share (including the Project) in Scenario B 2065 AM Peak Hour

As a result of the proposed Park and Ride facility present at Estuary Station, areas to the north of the alignment, such as the Balbriggan area, see a reduction in end-to-end public transport journey times to key locations along the alignment.

Estuary Station is located within the Swords Pavilions zone / area.

In Scenario A, the following changes to journey times are observed:

- The most significant journey time savings from the Swords Pavilions area would be to the Glasnevin area, of approximately 50 minutes in the 2035, 2050 and 2065 AM periods. This is a reduction of over 60% compared to the Do Minimum scenario.
- Public transport journeys from the Swords Pavilions area to other areas in north Dublin, such as the Blanchardstown area, will see savings of approximately 31 minutes in the 2035 AM period and rising to 34 minutes in the 2065 AM period; and to the Airport area, savings of approximately 16 minutes in the 2035, 2050 and 2065 AM periods, which is a reduction of approximately 50% compared to the Do Minimum scenario.
- Public transport journeys from the Swords Pavilions area to key Dublin City Centre locations such as O'Connell Street area and St Stephen's Green area will see savings of between 20 and 24 minutes in the 2035, 2050 and 2065 AM periods when the Proposed Project is in place.
- Public transport journeys from the Swords Pavilions area to areas in south Dublin, such as Sandyford, will see savings of approximately 30 minutes in the 2035, 2050 and 2065 AM periods.

In Scenario B, the following changes to journey times are observed:

- The most significant journey time savings from the Swords Pavilions area would be to the Glasnevin area, of approximately 28 minutes in the 2035 AM period, and 42 minutes in the 2065 AM period. This is a reduction of nearly 50% in 2035 and nearly 60% in 2065 compared to the Do Minimum scenarios.
- Public transport journeys from the Swords Pavilions area to other areas in north Dublin, such as the Blanchardstown area, will see savings of approximately 26 minutes in the 2035 AM period and rising to 35 minutes in the 2065 AM period; and to the Airport area, savings of approximately 10 minutes in the 2035, 2050 and 2065 AM periods, which is a reduction of approximately 40% compared to the Do Minimum scenario.
- Public transport journeys from the Swords Pavilions area to key Dublin City Centre locations such as O'Connell Street area and St Stephen's Green area will see savings of between 21 and 30 minutes in the 2035, 2050 and 2065 AM periods when the Proposed Project is in place.
- Public transport journeys from the Swords Pavilions area to areas in south Dublin, such as Sandyford, will see savings of approximately 27 to 32 minutes in the 2035, 2050 and 2065 AM periods.

6.1.2 Traffic Impact Assessment

The Park and Ride facility will be present during the Operational Phase and will result in changes in traffic flows within the receiving environment, with some roads such as the R132 and sections of the M1 Lissenhall Junction experiencing increases in flows and other sections such as the M1 south of Lissenhall will experience reductions in traffic flows, as detailed in 5.1.2 Park and Ride.

The ERM model results have been examined to estimate the reduction in private car travel associated with origin and destination trips in the area around Estuary Station and Park and Ride, as shown in Figure 6.5 and Figure 6.6. With the increases seen in public transport mode share, the zones around Estuary Station see a corresponding reduction in private car mode share, with reductions of up to 30 percentage points in this area in 2035 and 2050 and up to 20 percentage points in 2065 in Scenario A. The wider Swords area, such as the Drynam Hall residential area, sees reductions of up to 5 percentage points in private car mode share in the Operational Phase. In Scenario B, the surrounding area of Estuary Station sees a reduction in private car mode share of up to 30 percentage points in 2035, 2050 and 2065. The wider area sees a reduction of up to 5 percentage points.

Over the 12hr period, the zones within a 2km radius of Estuary Station see a reduction of over 2,000 car trips between the Scenario A 2035 Do Minimum and Do Something scenarios, reaching a reduction of over 2,100 trips in Scenario A 2065. In Scenario B, these zones also see a reduction of over 2,000 car trips between the 2035 Do Minimum and Do Something scenarios, however 2065 sees a reduction of 1,400 car trips between the Do Minimum and Do Something scenarios.

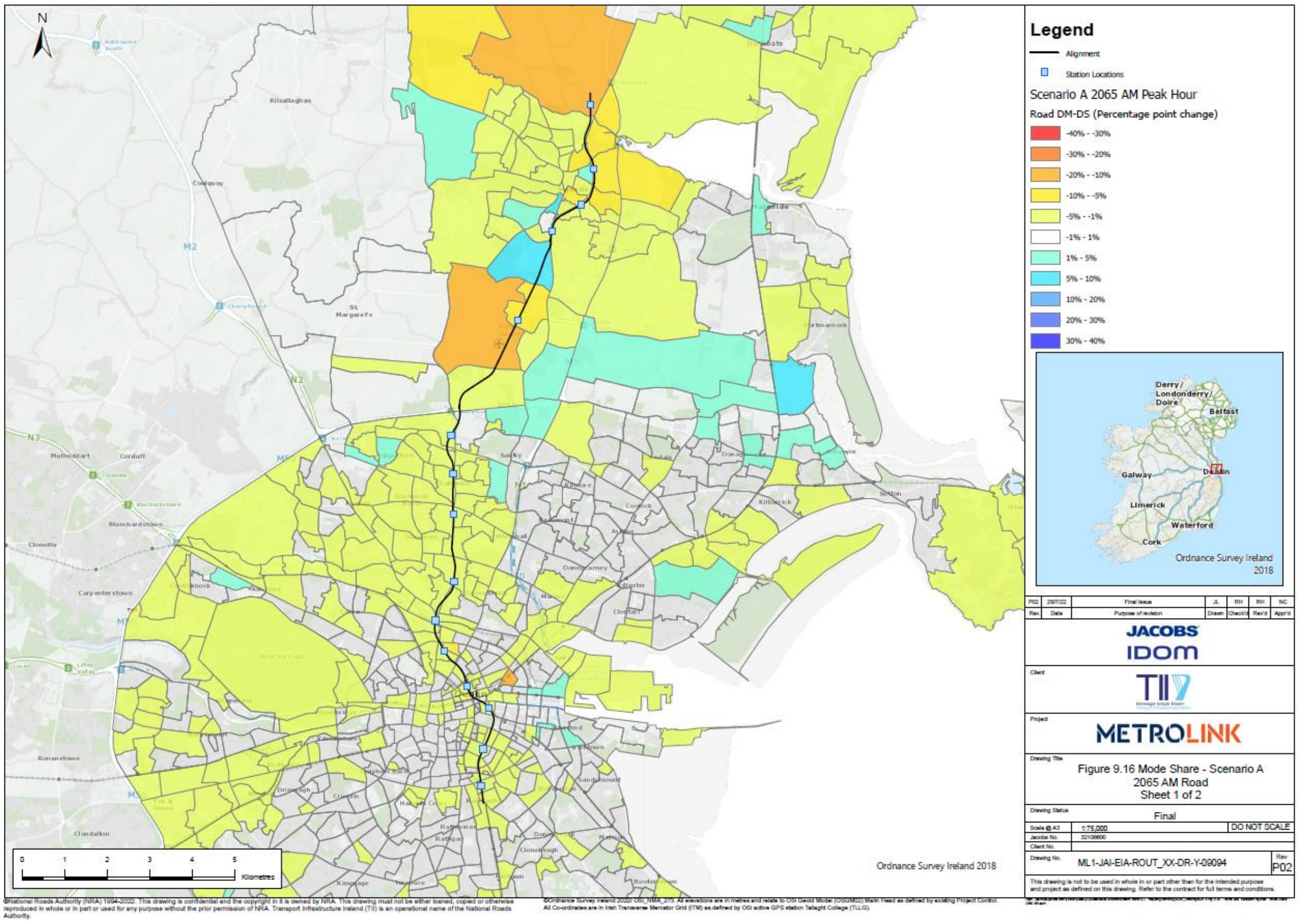


Figure 6.5: Changes in Car Mode Share in Scenario A 2065 AM Peak Hour

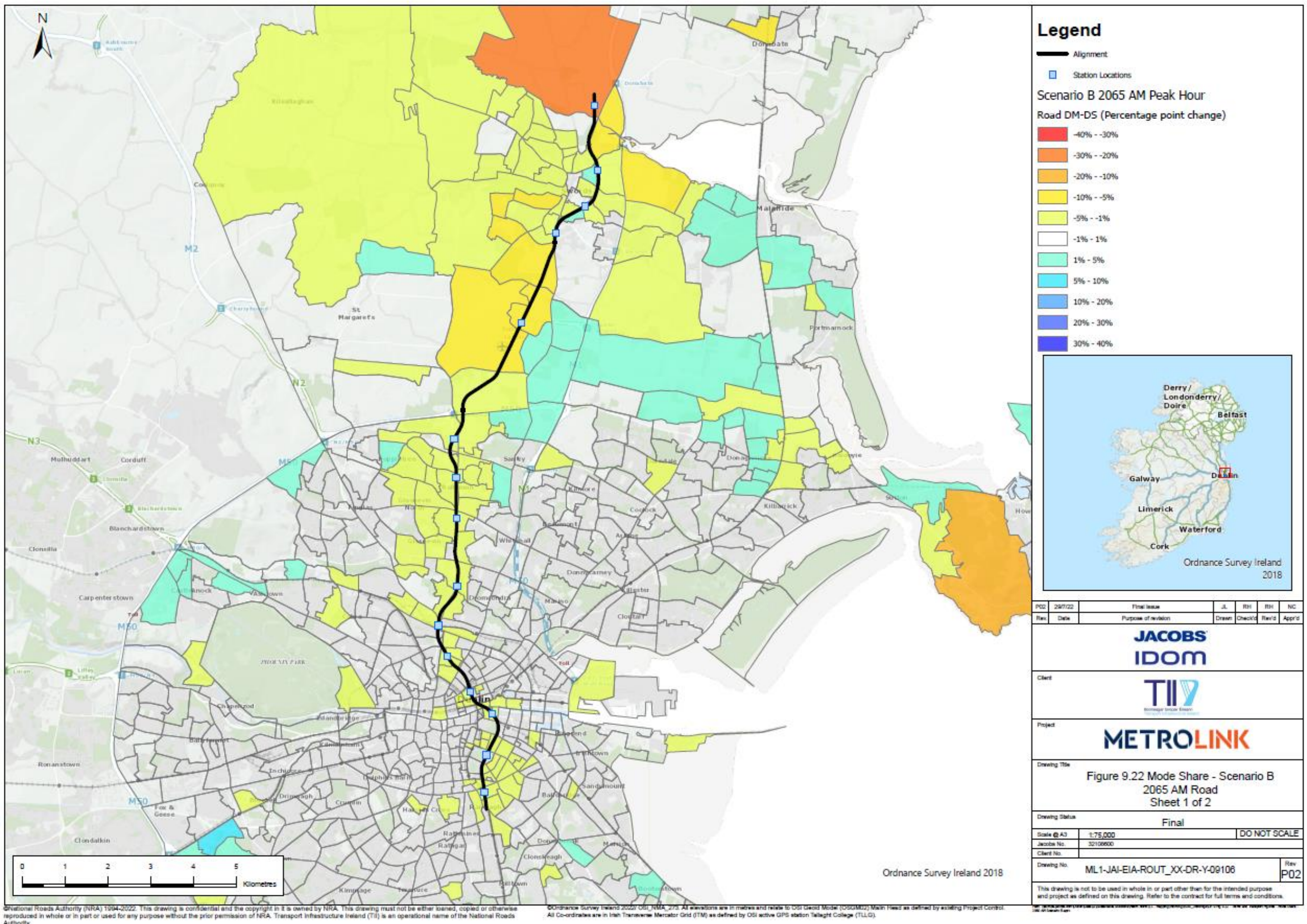


Figure 6.6: Changes in Car Mode Share in Scenario B 2065 AM Peak Hour

The operational impact traffic assessment has been undertaken for 2035 (Opening Year) and 2050 (Design Year) and we have assumed that background traffic levels have increased in line with forecast growth rates and that there is no reduction in traffic flows due to other schemes.

The sections below present the junction impact assessments undertaken for the Operational Phase, relating to both the M1 Junction 4 Lissenhall Junction and the proposed Park and Ride accesses.

6.1.2.1 Projected 2035 + Operational Traffic

6.1.2.1.1 M1 Junction 4 Lissenhall Junction 2035 ‘Operational Phase’

The AM peak hour projected 2035 traffic flow diagrams including the operational traffic are shown within Appendix A for the Northern and Southern Lissenhall junctions. These junctions were modelled using LINSIG and Table 6.1 summarises the results for both junctions.

Table 6.1: LinSig Model Result Summary – M1 Junction 4 Lissenhall Junction – 2035 AM Peak (DM and DS)

Lane Description	Movement	2035 Do-Minimum		2035 Do-Scheme		Difference DS- DM	
		Degree of Saturation [%]	Mean Max Queue [PCU]	Degree of Saturation [%]	Mean Max Queue [PCU]	Degree of saturation [%]	Mean Max Queue [PCU]
J1: M1-R132-R126 Lissenhall Junction (South)							
M1 Northbound Off Ramp	Ahead Left	59.0	6.4	67.8	7.9	8.8	1.5
	Ahead	73.9	8.9	66.1	7.9	-7.8	-1
R132 Northbound	Left Ahead	32.1	4.1	25.0	2.9	-7.1	-1.2
	Ahead	6.2	0.8	15.7	2.3	9.5	1.5
R132 Southbound	Right Ahead	52.1	20.0	70.9	11.9	18.8	-8.1
	Ahead	61.7	9.2	66.8	18.1	5.1	8.9
	Ahead	62.0	7.5	38.1	1.5	-23.9	-6
J2: M1-R132-R126 Lissenhall Junction (North)							
R132 Swords Road Southbound	Ahead Left	33.1	5.3	33.0	5.0	-0.1	-0.3
	Ahead	54.8	10.8	106.8	60.3	52	49.5
	Ahead	92.5	25.5	67.4	12.6	-25.1	-12.9
R126 Hearse Road	Left	90.6	21.4	106.3	56.9	15.7	35.5
M1 Southbound Off Ramp	Right Ahead Left	72.0	12.1	75.6	11.8	3.6	-0.3
R132 Northbound	Ahead	22.9	3.4	21.3	0.3	-1.6	-3.1
	Right Ahead	21.1	1.2	27.7	39.0	6.6	37.8

The Lissenhall Junction (South) is predicted to operate within capacity overall under both the 2035 Do-Minimum and 2035 Do-Scheme AM peak hour scenarios.

The results show that the Lissenhall Junction (North) is predicted to operate within capacity overall under the 2035 Do-Minimum AM peak hour scenario. The M1 Southbound Off Ramp will increase from 72.0% in the Do-Minimum scenario to 75.6% in the Do-Scheme scenario, resulting in queues remaining consistent from 13 pcus to 12 pcus. Assuming 1 pcu is 5.75m, the queue in the Do-Scheme scenario will be approximately 69m in length across two lanes. The length of the predicted queue will not extend to the bottom of the off-ramp, or the nose of the diverge slip.

The R126 Hearse Road will increase from 90.6% in the Do-Minimum scenario to 106.3% in the Do-Scheme scenario. The R132 Swords Road Southbound is expected to reach capacity in the Do-Scheme Scenario, however the predicted queues do not reach as far back as the next junction. R132 Northbound is predicted to operate within capacity. Although the R132 Swords Road Southbound and R126 Hearse Road are predicted to experience a high degree of saturation during the AM peak hour, it is also expected that these will operate within acceptable saturation and queueing levels during the rest of the day.

The PM projected 2035 traffic flows including the operational traffic are shown within Appendix A for the Northern and Southern Lissenhall junctions respectively, while

Table 6.2 summarises the results for both junctions.

Table 6.2: LinSig Model Result Summary – M1 Junction 4 Lissenhall Junction – 2035 PM Peak (DM and DS)

Lane Description	Movement	2035 Do-Minimum		2035 Do-Scheme		Difference DS -DM	
		Degree of Saturation [%]	Mean Max Queue [PCU]	Degree of Saturation [%]	Mean Max Queue [PCU]	Degree of Saturation [%]	Mean Max Queue [PCU]
J1: M1-R132-R126 Lissenhall Junction (South)							
M1 Northbound Off Ramp	Ahead Left	84.5	14.9	77.8	13.1	-6.7	-1.8
	Ahead	82.3	14.4	76.0	12.9	-6.3	-1.5
R132 Northbound	Left Ahead	84.9	24.8	59.8	13.1	-25.1	-11.7
	Ahead	21.2	3.3	75.3	18.1	54.1	14.8
R132 Southbound	Right Ahead	53.2	13.2	25.0	2.2	-28.2	-11
	Ahead	22.1	2.7	32.1	4.5	10	1.8
	Ahead	22.3	2.6	31.3	4.1	9	1.5
J2: M1-R132-R126 Lissenhall Junction (North)							
R132 Swords Road Southbound	Ahead Left	32.6	5.0	18.0	2.7	-14.6	-2.3
	Ahead	32.2	5.3	50.0	10.2	17.8	4.9
	Ahead	25.6	3.8	8.4	1.2	-17.2	-2.6
R126 Hearse Road	Left	48.6	7.5	19.9	1.7	-28.7	-5.8
M1 Southbound Off Ramp	Right Ahead Left	77.4	12.2	99.9	27.2	22.5	15
R132 Northbound	Ahead	71.2	15.5	83.9	18.0	12.7	2.5
	Ahead Right	59.8	7.0	61.6	8.8	1.8	1.8

The Lissenhall Junction (South) is predicted to operate within capacity overall under both the 2035 Do-Minimum and 2035 Do-Scheme PM peak hour scenarios. With the addition of the Park & Ride traffic, under the 2035 Do-Scheme PM peak hour scenario, the M1 Northbound Off Ramp arm of the south junction is predicted to operate within its practical capacity. The M1 Northbound Off Ramp will decrease from 84.5% in the Do-Minimum scenario to 77.8% in the Do-Scheme scenario. This will result in queues decreasing from 15 pcus in the Do-Minimum to 14 pcus (maximum 81m) in the Do-Scheme.

The Lissenhall Junction (North) is predicted to operate within capacity overall under the 2035 Do-Minimum PM peak hour scenario. The M1 Southbound Off Ramp approaches its practical capacity in the 2035 Do-Scheme PM peak hour scenario, increasing from 77.4% in the Do-Minimum scenario to 99.9% in the Do-Scheme scenario. The queue in the Do-Scheme scenario will be approximately 157m in length across two lanes. The length of the predicted queue will not extend to the bottom of the off-ramp, or the nose of the diverge slip.

6.1.2.1.2 Proposed Estuary Park and Ride Accesses 2035 ‘Operational Phase’

The AM and PM projected 2035 traffic flow diagrams including the operational traffic are shown within Appendix A for the Proposed Park & Ride North and South accesses, while Table 6.3 summarises the results for both junctions.

Table 6.3: LinSig Model Result Summary – Proposed Estuary Park and Ride Accesses 2035 AM Peak Hour (AM and PM)

Lane Description	Movement	2035 AM Peak Hour		2035 PM Peak Hour	
		Degree of Saturation [%]	Mean Max Queue [PCU]	Degree of Saturation [%]	Mean Max Queue [PCU]
J1: Proposed Estuary Park & Ride South Access					
R132 Northbound	Ahead Left	54.5	9.2	62.4	10.1
	Ahead	17.1	3.2	52.8	10.1
R132 Southbound	Ahead	61.9	2.3	45.8	8.9
	Right Ahead	64.6	2.2	39.6	5.4
Ennis Lane (South Access)	Right Left	41.8	2.0	69.4	11.0
J2: Proposed Estuary Park & Ride North Access					
R132 Swords Road Northbound	Left Ahead	45.6	24.2	66.8	25.4
	Ahead	19.8	3.2	71.7	4.4
North Access Road	Right Left	4.1	0.5	104.1	56.2
R132 Southbound	Ahead	67.1	18.6	35.5	7.1
	Ahead Right	91.9	34.9	58.5	9.3
J3: Proposed Estuary Park & Ride Entrance/Exit					
P & R Entrance	Left	34.7	13.2	21.8	7.8
P & R Exit	Right	1.6	0.2	77.9	23.1

The results show that the proposed Estuary Park & Ride accesses are predicted to operate within capacity during the AM peak hour 2035 Operational Phase. In the PM peak hour, the North Access Road exceeds practical capacity. Overall queue of 35 pcus (202m) is predicted on the R132 Southbound approach to the north junction, during the Weekday AM peak hour. The left entry lane from the new Park & Ride link road into the Park & Ride is predicted to experience a queue of 14 pcus (79m).

Due to the level of departures from the Park & Ride, during the PM peak period, eastbound queue of 57 pcus (324m) is predicted on the new link road between the P&R entrance and the R132 Swords Road.

6.1.2.2 Projected 2050 + Operational Traffic

6.1.2.2.1 M1 Junction 4 Lissenhall Junction 2050 ‘Operational Phase’

The AM projected 2050 traffic flow diagrams, including the operational traffic, are shown within Appendix A for the Northern and Southern Lissenhall junctions respectively, Table 6.4 summarises the results for both junctions.

Table 6.4: LinSig Model Result Summary – M1 Junction 4 Lissenhall Junction – 2050 AM Peak (DM and DS)

Lane Description	Movement	2050 Do-Minimum		2050 Do-Scheme		Difference DS - DM	
		Degree of Saturation [%]	Mean Max Queue [PCU]	Degree of Saturation [%]	Mean Max Queue [PCU]	Degree of Saturation [%]	Mean Max Queue [PCU]
J1: M1-R132-R126 Lissenhall Junction (South)							
M1 Northbound Off Ramp	Ahead Left	94.0	16.1	66.9	10.1	-27.1	-6
	Ahead	91.8	14.5	65.4	10.1	-26.4	-4.4
R132 Northbound	Left Ahead	59.4	9.1	29.7	4.2	-29.7	-4.9
	Ahead	7.4	1.0	22.5	3.6	15.1	2.6
R132 Southbound	Right Ahead	78.8	27.9	62.1	10.2	-16.7	-17.7
	Ahead	81.3	16.2	79.6	21.4	-1.7	5.2
	Ahead	46.2	12.6	60.0	16.9	13.8	4.3
J2: M1-R132-R126 Lissenhall Junction (North)							
R132 Swords Road Southbound	Ahead Left	19.3	2.9	45.6	8.5	26.3	5.6
	Ahead	71.3	18.5	115.0	137.2	43.7	118.7
	Ahead	96.8	39.1	46.9	8.8	-49.9	-30.3
R126 Hearse Road	Left	98.0	20.1	115.1	57.9	17.1	37.8
M1 Southbound Off Ramp	Right Ahead Left	51.9	7.3	104.8	46.4	52.9	39.1
R132 Northbound	Ahead	38.4	6.9	41.5	1.3	3.1	-5.6
	Ahead	30.4	2.5	49.1	42.0	18.7	39.5

The results show that the Lissenhall Junction (South) is predicted to operate within capacity under the 2050 Do-Minimum AM peak hour scenario. A maximum queue of 28 pcus (161m) was predicted on the R132 Southbound carriageway in the Weekday AM peak hour, with a queue of 17 pcus predicted on the M1 Northbound Off Ramp.

With the addition of traffic associated with the proposed Estuary Park and Ride, under the 2050 Do-Scheme AM peak hour scenario, the R132 Swords Road Southbound, R126 Hearse Road and the M1 Southbound Off Ramp arms of the Lissenhall North Junction are predicted to operate over capacity, with all other arms predicted to operate within capacity. The R126 Hearse Road and the M1 Southbound Off Ramp are predicted to experience queue increases to 58 pcus (333m) and 47 pcus (267m) respectively. Queuing on Hearse Road would prevent traffic accessing the M1 Southbound On-Ramp.

Although the R126 Hearse Road and the M1 Southbound Off Ramp are predicted to experience a high degree of saturation during the AM peak hour, it is also expected that these will operate within acceptable saturation and queueing levels during the rest of the day.

The PM projected 2050 traffic flows including the operational traffic are shown within Appendix A for the Northern and Southern Lissenhall junctions respectively, while Table 6.5 summarises the results for both junctions.

Table 6.5: LinSig Model Result Summary – M1 Junction 4 Lissenhall Junction – 2050 PM Peak (DM and DS)

Lane Description	Movement	2050 Do-Minimum		2050 Do-Scheme		Difference DS - DM	
		Degree of Saturation [%]	Mean Max Queue [PCU]	Degree of Saturation [%]	Mean Max Queue [PCU]	Degree of Saturation [%]	Mean Max Queue [PCU]
J1: M1-R132-R126 Lissenhall Junction (South)							
M1 Northbound Off Ramp	Ahead Left	83.9	15.0	78.1	13.1	-5.8	-1.9
	Ahead	81.9	14.7	76.0	12.9	-5.9	-1.8
R132 Northbound	Left Ahead	84.4	24.5	59.5	13.1	-24.9	-11.4
	Ahead	20.9	3.3	82.0	21.5	61.1	18.2
R132 Southbound	Right Ahead	52.8	14.4	30.3	5.0	-22.5	-9.4
	Ahead	15.5	2.0	31.9	4.4	16.4	2.4
	Ahead	15.8	1.9	30.0	3.7	14.2	1.8
J2: M1-R132-R126 Lissenhall Junction (North)							
R132 Swords Road Southbound	Ahead Left	35.4	5.7	19.4	3.0	-16	-2.7
	Ahead	32.4	5.5	52.2	10.8	19.8	5.3
	Ahead	18.7	2.7	6.1	0.9	-12.6	-1.8
R126 Hearse Road	Left	33.5	4.2	36.5	2.6	3	-1.6
M1 Southbound Off Ramp	Right Ahead Left	82.1	14.0	99.7	27.0	17.6	13
R132 Northbound	Ahead	73.7	16.7	83.8	18.0	10.1	1.3
	Ahead	61.7	7.5	63.3	9.5	1.6	2

The results show that the existing Lissenhall Junctions are predicted to operate within capacity under the 2050 Do-Minimum and 2050 Do-Scheme PM peak hour scenarios. With the addition of the Park & Ride traffic, under the 2050 Do-Scheme PM peak hour scenario, the M1 Southbound Off Ramp is predicted to operate near practical operating capacity, with estimated queues of 27 pcus (156m). All other arms of the north and south junctions are predicted to operate within capacity.

Although the M1 Southbound Off Ramp is predicted to operate close to capacity during the PM peak hour, it is also expected that it will have acceptable saturation and queueing levels during the rest of the day.

6.1.2.2.2 Proposed Estuary Park and Ride Accesses 2050 'Operational Phase'

The AM and PM projected 2050 traffic flow diagrams including the operational traffic are shown within Appendix A for the Proposed Park & Ride North and South accesses, while Table 6.6 summarises the results for both junctions.

Table 6.6: LinSig Model Result Summary – Proposed Estuary Park and Ride Accesses 2050 (AM and PM)

Lane Description	Movement	2050 AM Peak Hour		2050 PM Peak Hour	
		Degree of Saturation [%]	Mean Max Queue [PCU]	Degree of Saturation [%]	Mean Max Queue [PCU]
J1: Proposed Estuary Park & Ride South Access					
R132 Northbound	Ahead Left	46.6	8.3	52.3	8.7
	Ahead	19.9	3.7	42.4	8.7
R132 Southbound	Ahead	58.0	5.9	40.5	9.7
	Right Ahead	60.8	7.1	32.4	7.1
Ennis Lane (South Access)	Right Left	42.6	2.0	100.6	20.7
J2: Proposed Estuary Park & Ride North Access					
R132 Swords Road Northbound	Left Ahead	52.6	23.7	82.8	24.9
	Ahead	28.7	3.2	88.7	15.0
North Access Road	Right Left	3.5	0.5	93.7	17.4
R132 Southbound	Ahead	63.0	16.7	28.2	5.3
	Ahead Right	99.9	60.0	42.4	5.5
J3: Proposed Estuary Park & Ride Entrance/Exit					
Park & Ride Entrance	Left	54.8	23.6	21.8	2.1
Park & Ride Exit	Right	1.9	0.3	77.9	23.1

The results show that the proposed Estuary Park & Ride accesses are predicted to operate within capacity during the Weekday AM peak hour under the 2050 Operational Phase scenario. Overall queue of 60pcus (345m) was predicted on R132 Southbound approach to the north junction, during the Weekday AM peak hour. The left entry lane from the Park & Road Access Road into the Park & Ride would experience queues of 24 pcus (136m).

The South Access arm of the south access junction is predicted to operate over capacity during the PM peak hour, with all other arms predicted to operate within capacity. Due to the level of departures from the Park & Ride, during the PM peak period, a queue of 21 pcus (120m) is predicted on the Park & Ride exit. Although the South Access arm is predicted to operate over capacity during the PM peak hour, it is also expected that it will have acceptable saturation and queueing levels during the rest of the day.

6.1.2.3 Estuary Roundabout

Estuary Roundabout is located in close proximity to the proposed station and Park and Ride. An assessment of the ERM 2035 baseline flows against the base plus operational development flows confirm that there is no predicted impact on this junction during the Do-Scheme scenarios. Furthermore, as Figure 6.7 and Figure 6.8 below illustrate, it is predicted that there will be a reduction in flows on the majority of arms during the 2035 Base + operational traffic AM and PM peak scenarios, particularly on the R132 southbound arm, where a reduction in flows entering that arm of 320 is predicted during the AM peak period. While the PM peak scenario shows an increase in flows on the R132 southbound arm, the flows are lower than in the AM peak scenario. As a result of the predicted reduction in flows at this junction in the AM peak Do-Scheme scenario, no junction impact assessments have been undertaken at the Estuary Roundabout.

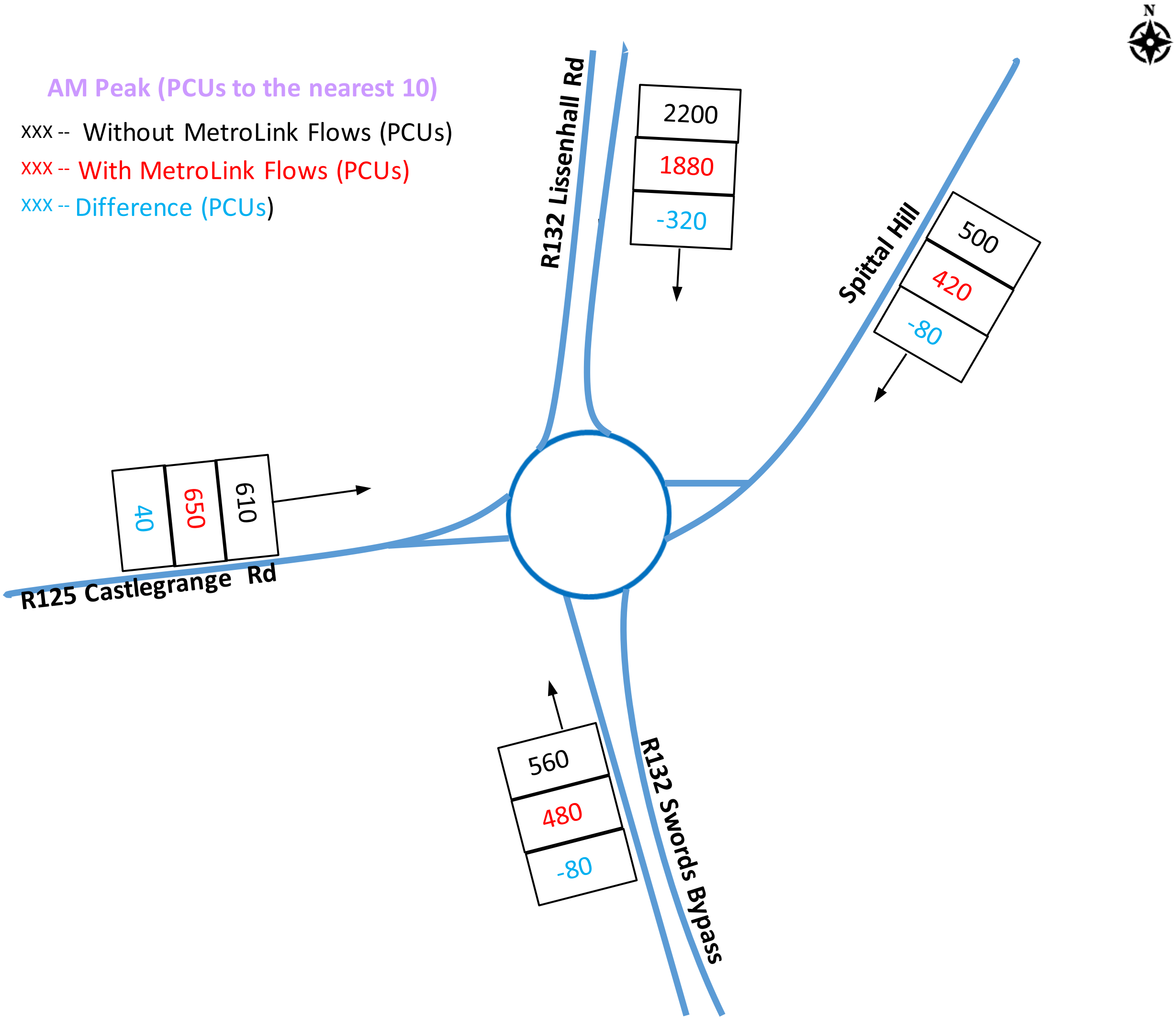


Figure 6.7: Estuary Roundabout- ERM 2035 Base + Operational Traffic Flow Comparison AM Peak

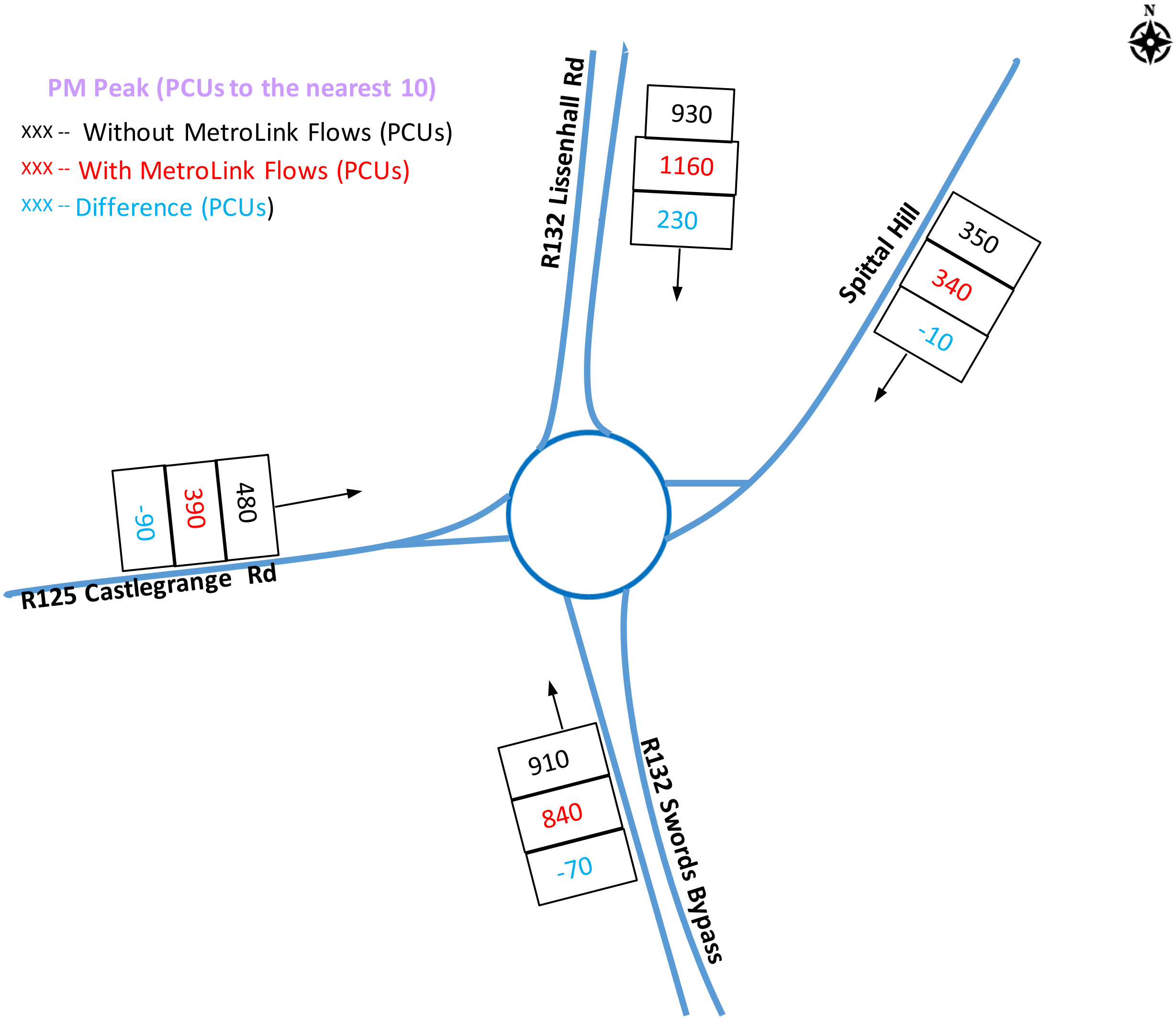


Figure 6.8: Estuary Roundabout – ERM 2035 Base + Operational Traffic Flow Comparison PM Peak

6.1.2.4 The R132 Connectivity Scheme

The Fingal County Council R132 Connectivity Scheme aims to reduce junction footprint and improve coordination of public transport through the scheme area and improve pedestrian and cyclist crossings at the junctions through the introduction of signalised junctions with reduced traffic lanes. The impact of the emerging scheme was assessed, and the results documented in the following sections. As such, the source of the data is the R132 Connectivity Scheme, which has been applied to the LinSig models.

6.1.2.4.1 Proposed R132 North Lissenhall Road / R125 Castlegrange Road / R132 South Swords Bypass / Spittal Hill Signalised Junction During 2035 'Operational Phase'

Table 6.7 and Table 6.8 summarise the results of the expected junction performance in the 2035 'Operational Phase'.

Table 6.7: LinSig Model Result Summary – Proposed R132 North Lissenhall Road / R125 Castlegrange Road / R132 South Swords Bypass / Spittal Hill Signalised Junction – 2035 AM Peak

Lane Description	Movement	2035 Do-Something (R132 Connectivity)		2035 Do-Something (R132) + MetroLink	
		Degree of Saturation [%]	Mean Max Queue [PCU]	Degree of Saturation [%]	Mean Max Queue [PCU]
R132 North Lissenhall Rd	Left Ahead	203.8	589.9	146.7	206.7
	Right	197.8	91.8	144.7	114.9
Spittal Hill	Right Left Ahead	204.3	157.3	74.3	5.3
R132 South Swords Bypass	Left Ahead	58.4	13.9	116.4	91.8
	Right	6.0	0.3	23.7	2.7
R125 Castlegrange Road	Left Ahead	134.1	100.5	50.6	9.1
	Right	22.0	0.7	149.6	48.2
Practical Reserve Capacity (PRC) [%]		-127.0		-66.2 (Improvement of 60.8%)	

The results show that although the junction would still operate above capacity during the 2035 AM peak hour, the introduction of the Project will result in reduced vehicular traffic on the road network, and overall improvement in operation of the junction.

Table 6.8: LinSig Model Result Summary – Proposed R132 North Lissenhall Road / R125 Castlegrange Road / R132 South Swords Bypass / Spittal Hill Signalised Junction – 2035 PM Peak

Lane Description	Movement	2035 Do-Something (with R132 Connectivity)		2035 Do-Something (R132) + MetroLink	
		Degree of Saturation [%]	Mean Max Queue [PCU]	Degree of Saturation [%]	Mean Max Queue [PCU]
R132 North Lissenhall Rd	Left Ahead	86.0	22.5	111.4	80.0
	Right	105.4	21.8	110.5	27.8
Spittal Hill	Right Left Ahead	108.8	30.0	108.1	28.5
R132 South Swords Bypass	Left Ahead	108.5	69.1	89.1	24.0
	Right	23.8	2.0	47.1	4.1
R125 Castlegrange Road	Left Ahead	70.1	9.8	66.3	5.6
	Right	40.5	1.5	19.6	0.6
Practical Reserve Capacity (PRC) [%]		-20.8		-23.8 (Reduction of 3%)	

The junction operates above theoretical capacity for both scenarios in the PM peak, with the performance of the R132 North and the Spittal Hill arm exceeding 100% DoS with the MetroLink in operation. The remaining two arms will experience reductions in the DoS in the '+ MetroLink' scenario.

Signal times have been optimised for delays in the model, which redistributes the green time, reducing the available green time on Spittal Hill and causes a corresponding increase on R132 North. The signal times could be optimised to improve PRC and this would provide for a higher PRC value in the '+ MetroLink' scenario.

6.1.2.4.2 Proposed R132 Swords Bypass Road / Seatown Road Signalised Junction During 2035 'Operational Phase'

Table 6.9 and Table 6.10 summarise the results of the expected junction performance in the 2035 'Operational Phase'.

Table 6.9: LinSig Model Result Summary – Proposed R132 Swords Bypass Road / Seatown Road Signalised Junction – 2035 AM Peak

Lane Description	Movement	2035 Do-Something (with R132 Connectivity)		2035 Do-Something (R132) + MetroLink	
		Degree of Saturation [%]	Mean Max Queue [PCU]	Degree of Saturation [%]	Mean Max Queue [PCU]
R132 North Swords Bypass	Left Ahead	148.7	270.9	149.4	268.8
	Right	133.7	28.5	137.9	31.2
Mantua Road	Right Left Ahead	145.7	42.2	137.9	40.5
R132 South Swords Bypass	Left Ahead	51.9	11.5	42.1	8.5
	Right	59.8	3.0	73.3	4.1
Seatown Road	Ahead Left	75.9	8.6	75.0	8.7
	Right	85.4	6.5	81.5	5.7
Practical Reserve Capacity (PRC) [%]		-65.2		-66.0 (Reduction of 0.8%)	

The results show a minor reduction in practical reserve capacity in the overall junction performance in the AM peak with the MetroLink in operation, with the practical reserve capacity reducing by 0.8 percentage points.

Table 6.10: LinSig Model Result Summary – Proposed R132 Swords Bypass Road / Seatown Road Signalised Junction – 2035 PM Peak

Lane Description	Movement	2035 Do-Something (with R132 Connectivity)		2035 Do-Something (R132) + MetroLink	
		Degree of Saturation [%]	Mean Max Queue [PCU]	Degree of Saturation [%]	Mean Max Queue [PCU]
R132 North Swords Bypass	Left Ahead	47.2	9.6	63.6	13.1
	Right	86.7	6.3	88.9	9.2
Mantua Road	Right Left Ahead	91.1	12.0	87.9	10.3
R132 South Swords Bypass	Left Ahead	89.4	25.4	90.0	23.7
	Right	17.2	0.8	10.6	0.7
Seatown Road	Ahead Left	17.5	2.0	18.3	1.9
	Right	17.7	0.7	15.3	0.7
Practical Reserve Capacity (PRC) [%]		-1.2		-0.0 (Improvement of 1.2%)	

The results show improvements in the overall junction performance in the PM peak with the Project in operation, with the practical reserve capacity improving by 1.2 percentage points.

6.1.2.4.3 Proposed R132 Swords Bypass Road / R106 Swords Road / R106 Malahide Road Signalised Junction During 2035 'Operational Phase'

Table 6.11 and Table 6.12 summarise the results of the expected junction performance in the 2035 'Operational Phase'.

Table 6.11: LinSig Model Result Summary – Proposed R132 Swords Bypass Road / R106 Swords Road / R106 Malahide Road Signalised Junction – 2035 AM Peak

Lane Description	Movement	2035 Do-Something (with R132 Connectivity)		2035 Do-Something (R132) + MetroLink	
		Degree of Saturation [%]	Mean Max Queue [PCU]	Degree of Saturation [%]	Mean Max Queue [PCU]
R132 North Swords Bypass	Left Ahead	192.9	293.7	148.5	161.7
	Right	103.5	13.1	98.2	10.3
R106 Swords Road	Right Left Ahead	90.6	23.4	87.3	21.0
	Right	49.2	4.6	52.6	5.2
R132 South Swords Bypass	Left Ahead	115.1	39.3	79.3	9.3
	Right	36.1	2.1	28.9	1.7
R106 Malahide Road	Ahead Left	34.1	9.8	32.0	9.0
	Right	178.9	47.2	141.2	31.7
Practical Reserve Capacity (PRC) [%]		**-114.3**		**-65.0 (Improvement of 49.3%)**	

The results show improvements in the overall junction performance in the AM peak with the MetroLink in operation, with the practical reserve capacity improving by 49.3 percentage points.

Table 6.12: LinSig Model Result Summary – Proposed R132 Swords Bypass Road / R106 Swords Road / R106 Malahide Road Signalised Junction – 2035 PM Peak

Lane Description	Movement	2035 Do-Something (with R132 Connectivity)		2035 Do-Something (R132) + MetroLink	
		Degree of Saturation [%]	Mean Max Queue [PCU]	Degree of Saturation [%]	Mean Max Queue [PCU]
R132 North Swords Bypass	Left Ahead	90.5	22.9	102.8	43.0
	Right	69.0	4.4	71.0	4.6
R106 Malahide Road	Right Left Ahead	61.2	8.5	47.8	5.5
	Right	111.7	20.7	106.7	18.0
R132 South Swords Bypass	Left Ahead	116.5	70.5	104.0	35.0
	Right	84.3	6.9	71.0	5.0
R106 Malahide Road	Ahead Left	51.8	14.7	48.3	14.2
	Right	107.0	19.0	77.0	8.0
Practical Reserve Capacity (PRC) [%]		**-29.4**		**-18.6 (Improvement of 10.8%)**	

The results show improvements in the overall junction performance in the PM peak with the Project in operation, with the practical reserve capacity improving by 10.8 percentage points.

6.1.2.4.4 Proposed R132 North Lissenhall Road / R125 Castlegrange Road / R132 South Swords Bypass / Spittal Hill Signalised Junction During 2050 'Operational Phase'

Table 6.13 and Table 6.14 summarise the results of the expected junction performance in the 2050 'Operational Phase'.

Table 6.13: LinSig Model Result Summary – Proposed R132 North Lissenhall Road / R125 Castlegrange Road / R132 South Swords Bypass / Spittal Hill Signalised Junction – 2050 AM Peak

Lane Description	Movement	2050 Do-Something (with R132 Connectivity)		2050 Do-Something (R132) + MetroLink	
		Degree of Saturation [%]	Mean Max Queue [PCU]	Degree of Saturation [%]	Mean Max Queue [PCU]
R132 North Lissenhall Rd	Left Ahead	212.3	626.0	206.4	515.2
	Right	197.1	91.1	200.6	84.2
Spittal Hill	Right Left Ahead	205.7	164.5	189.5	130.6
R132 South Swords Bypass	Left Ahead	63.6	15.8	62.2	14.0
	Right	6.6	0.3	9.6	0.5
R125 Castlegrange Road	Left Ahead	115.5	55.6	87.2	16.0
	Right	19.7	0.6	8.5	0.5
Practical Reserve Capacity (PRC) [%]		**-135.9**		**-129.3 (Improvement of 6.6%)**	

The results show improvements in the overall junction performance in the AM peak with the Project in operation, with the practical reserve capacity improving by 6.6 percentage points.

Table 6.14: LinSig Model Result Summary – Proposed R132 North Lissenhall Road / R125 Castlegrange Road / R132 South Swords Bypass / Spittal Hill Signalised Junction – 2050 PM Peak

Lane Description	Movement	2050 Do-Something (with R132 Connectivity)		2050 Do-Something (R132) + MetroLink	
		Degree of Saturation [%]	Mean Max Queue [PCU]	Degree of Saturation [%]	Mean Max Queue [PCU]
R132 North Lissenhall Rd	Left Ahead	98.3	34.4	113.7	85.6
	Right	129.4	44.3	110.5	27.8
Spittal Hill	Right Left Ahead	131.5	81.7	112.7	38.8
R132 South Swords Bypass	Left Ahead	129.7	156.5	114.2	89.0
	Right	45.9	3.4	80.2	8.5
R125 Castlegrange Road	Left Ahead	67.8	9.9	78.4	8.8
	Right	29.3	0.9	16.6	0.5
Practical Reserve Capacity (PRC) [%]		**-46.1**		**-26.9 (Improvement of 19.2%)**	

The results show improvements in the overall junction performance in the PM peak with the MetroLink in operation, with the practical reserve capacity improving by 19.2 percentage points.

6.1.2.4.5 Proposed R132 Swords Bypass Road / Seatown Road Signalised Junction During 2050 'Operational Phase'

Table 6.15 and Table 6.16 summarise the results of the expected junction performance in the 2050 'Operational Phase'.

Table 6.15: LinSig Model Result Summary – Proposed R132 Swords Bypass Road / Seatown Road Signalised Junction – 2050 AM Peak

Lane Description	Movement	2050 Do-Something (with R132 Connectivity)		2050 Do-Something (R132) + MetroLink	
		Degree of Saturation [%]	Mean Max Queue [PCU]	Degree of Saturation [%]	Mean Max Queue [PCU]
R132 North Swords Bypass	Left Ahead	154.1	297.4	158.4	306.7
	Right	121.1	20.6	119.4	19.6
Mantua Road	Right Left Ahead	147.0	35.4	127.4	29.4
R132 South Swords Bypass	Left Ahead	53.0	11.8	45.5	9.5
	Right	78.3	4.7	88.4	6.2
Seatown Road	Ahead Left	76.1	8.4	81.1	10.1
	Right	90.7	9.0	85.2	7.1
Practical Reserve Capacity (PRC) [%]		-71.2		-76.0 (Reduction of 4.8%)	

The results show reductions in the overall junction performance in the AM peak with the Project in operation, with the practical reserve capacity decreasing by 4.8 percentage points.

Table 6.16: LinSig Model Result Summary – Proposed R132 Swords Bypass Road / Seatown Road Signalised Junction – 2050 PM Peak

Lane Description	Movement	2050 Do-Something (with R132 Connectivity)		2050 Do-Something (R132) + MetroLink	
		Degree of Saturation [%]	Mean Max Queue [PCU]	Degree of Saturation [%]	Mean Max Queue [PCU]
R132 North Swords Bypass	Left Ahead	44.9	9.2	51.0	10.7
	Right	104.6	12.5	107.6	16.7
Mantua Road	Right Left Ahead	103.8	29.0	106.0	32.0
R132 South Swords Bypass	Left Ahead	104.7	57.2	108.1	69.2
	Right	20.2	1.0	16.5	0.9
Seatown Road	Ahead Left	30.7	2.6	25.7	2.1
	Right	8.8	0.2	17.8	0.4
Practical Reserve Capacity (PRC) [%]		-16.4		-20.1 (Reduction of 3.7%)	

The results show reductions in the overall junction performance in the PM peak with the Project in operation, with the practical reserve capacity decreasing 0.9 percentage points.

6.1.2.4.6 Proposed R132 Swords Bypass Road / R106 Swords Road / R106 Malahide Road Signalised Junction During 2050 'Operational Phase'

Table 6.17 and Table 6.18 summarise the results of the expected junction performance in the 2050 'Operational Phase'.

Table 6.17: LinSig Model Result Summary – Proposed R132 Swords Bypass Road / R106 Swords Road / R106 Malahide Road Signalised Junction – 2050 AM Peak

Lane Description	Movement	2050 Do-Something		2050 Do-Something (R132) + MetroLink	
		Degree of Saturation [%]	Mean Max Queue [PCU]	Degree of Saturation [%]	Mean Max Queue [PCU]
R132 North Swords Bypass	Left Ahead	205.2	331.4	174.9	240.3
	Right	97.6	10.1	92.9	8.5
R106 Swords Road	Left Ahead	89.6	23.5	86.4	21.0
	Right	51.8	4.9	54.3	5.4
R132 South Swords Bypass	Left Ahead	116.4	41.2	86.9	11.1
	Right	34.9	2.1	37.3	2.2
R106 Malahide Road	Ahead Left	34.5	9.4	33.1	8.9
	Right	204.8	61.4	169.9	49.6
Practical Reserve Capacity (PRC) [%]		**-128.0**		**-94.3 (Improvement of 33.7%)**	

The results show improvements in the overall junction performance in the AM peak with the Project in operation, with the practical reserve capacity improving by approximately 33.7 percentage points.

Table 6.18: LinSig Model Result Summary – Proposed R132 Swords Bypass Road / R106 Swords Road / R106 Malahide Road Signalised Junction – 2050 PM Peak

Lane Description	Movement	2050 Do-Something		2050 Do-Something + MetroLink	
		Degree of Saturation [%]	Mean Max Queue [PCU]	Degree of Saturation [%]	Mean Max Queue [PCU]
R132 North Swords Bypass	Left Ahead	100.5	38.5	97.3	33.1
	Right	84.3	6.4	82.3	6.1
R106 Swords Road	Left Ahead	62.4	8.5	55.5	6.3
	Right	113.5	21.6	120.2	24.3
R132 South Swords Bypass	Left Ahead	144.4	157.6	132.6	132.2
	Right	87.9	7.6	85.5	7.1
R106 Malahide Road	Ahead Left	51.7	14.3	56.3	14.5
	Right	143.9	56.5	129.9	44.6
Practical Reserve Capacity (PRC) [%]		**-60.4**		**-47.3 (Improvement of 13.1%)**	

The results show improvements in the overall junction performance in the PM peak with the Project in operation, with the practical reserve capacity improving by 13.1 percentage points.

6.1.3 Pedestrian Impact Assessment

Minimal pedestrian trips to this station are anticipated, given the walking distance to surrounding catchments and the limited current developments within walking distance of the station, therefore the Metrolink scheme is unlikely to have any impacts on the pedestrian network. As a result, a pedestrian comfort assessment has not been undertaken at this station.

Pedestrian access to the station will be segregated from vehicular traffic. Pedestrian access to the station is also provided for by way of footpaths accessing the site and controlled pedestrian crossings on the new junctions on the R132 and SWRD.

Pedestrians can access the station's northbound platform via a stairway at the southern end or continue along a new subway under the railway to access the station via stairs to the southbound platform or the entrance on the east side of the station. Two sets of stairs and two lifts, one on the northbound platform and one on the southbound platform, will lead between the northern end of the station and a pedestrian bridge linking with the Park and Ride building at Level One.

6.1.4 Cyclist Impact Assessment

The future street level layout for Estuary Station includes a two-way cycle lane along the western side of the R132, to the east of the proposed station. Crossing facilities are also provided on the R132. This has a significant positive impact on the Quality of Service for cyclists in the area, progressing from a Level C to a Level A QoS. There will also be a two-way cycle lane to the east of the proposed station, with linkages to the proposed bike parking and Park and Ride facility.

A methodology has been applied to determine the potential demand for cycle parking at each of the stations. This methodology utilises the number of boarding and alighting passengers, the distance of origins/destinations from the station, and the location of the station. The passenger demand from an earlier Opening Year has been utilised to determine the potential cycle demand in the Opening Year, and in the Opening Year +5 Years.

This approach has informed the design and the number of cycle parking spaces provided at each station. Other factors such as the availability of land, potential future land uses and parking supply, and the location of the station have also been taken into consideration by the design team in determining the quantum of cycle parking spaces provided.

For the Estuary Station, a total of 254 cycle spaces are proposed.

6.1.5 Road Safety

A Stage 1 Road Safety Audit has been undertaken for all of the proposed highway works for the Project. This is under a separate cover.

7. Summary

The Estuary Station and Park and Ride will facilitate approximately 18,000 passenger movements over the 12hr peak period (07:00-19:00) in Scenario A in 2035, rising to over 20,900 in 2050 and over 20,600 in 2065. In Scenario B, there will be approximately 14,400 boarders in 2035, rising to 19,100 in 2050. In 2065, there will be 14,200 boarders over the 12hr period.

The main catchment origins and destinations of the people boarding and alighting at the Estuary Station will be much wider than the walking catchments of the station as a result of the presence of the Park and Ride facility attracting commuter trips to and from locations such as north of Drogheda and Balbriggan.

The Project will result in increases in public transport mode share of between 20 and 40 percentage points for zones surrounding Estuary Station. There will be a reduction in private car mode share of between 5 and 30 percentage points for the zones surrounding the station, which is a reduction of up to 2,100 car trips from the zones immediately surrounding Estuary Station over the 12hr peak period in Scenario A 2065, and a reduction of 1,400 car trips in Scenario B 2065.

The Lissenhall Junction (South) is predicted to operate within capacity overall under the 2035 Do Something AM peak hour scenarios. The M1 Southbound Off Ramp will increase from 72.0% in the Do Minimum scenario to 75.6% in the Do-Scheme scenario, resulting in queues of approximately 69m. The length of the predicted queue will not extend to the bottom of the off-ramp, or the nose of the diverge slip.

Although the R132 Swords Road Southbound and R126 Hearse Road are predicted to experience a high degree of saturation during the AM peak hour, it is also expected that these will operate within acceptable saturation and queueing levels during the rest of the day.

With the addition of the Park & Ride traffic, under the 2035 Do Something PM peak hour scenario, the M1 Northbound Off Ramp arm of the south junction is predicted to operate within its practical capacity. The M1 Northbound Off Ramp will decrease from 84.5% in the Do Minimum scenario to 77.8% in the Do Something scenario. This will result in queues decreasing from 15 pcus in the Do-Minimum to 14 pcus (maximum 81m) in the Do Something.

The results show that the proposed Estuary Park & Ride accesses are predicted to operate within capacity during the AM peak hour 2035 Operational Phase, and in the 2050 Operational Phase. In the PM peak hour, the North Access Road exceeds practical capacity. Overall queue of 35 pcus (202m) is predicted on the R132 Southbound approach to the north junction, during the Weekday AM peak hour. The left entry lane from the new Park & Ride link road into the Park & Ride is predicted to experience a queue of 14 pcus (79m).

Due to the level of departures from the Park & Ride, during the PM peak period, eastbound queue of 57 pcus (324m) is predicted on the new link road between the P&R entrance and the R132 Swords Road.

The Project will result in improvements to the public transport journey times for people in the area, such as a saving of approximately 50 minutes for journeys from Swords Pavillions to Glasnevin, and reductions of up to 24 minutes from Swords Pavillions to Dublin City Centre locations such as O’Connell Street and St. Stephen’s Green in the Scenario A AM periods.

In overall terms, whilst the Park and Ride facility will attract an increased number of car trips on the immediate network, the Estuary Station will provide for improvements to the public transport network that will result in decreases in private car usage/trips, increases in public transport usage/trips and will facilitate walking and cycling to the station through the provision of 254 cycle parking spaces, without significantly impacting on the operation of the road network in the area.

Appendix A. Traffic Flow Diagrams

A.1 Base Flows

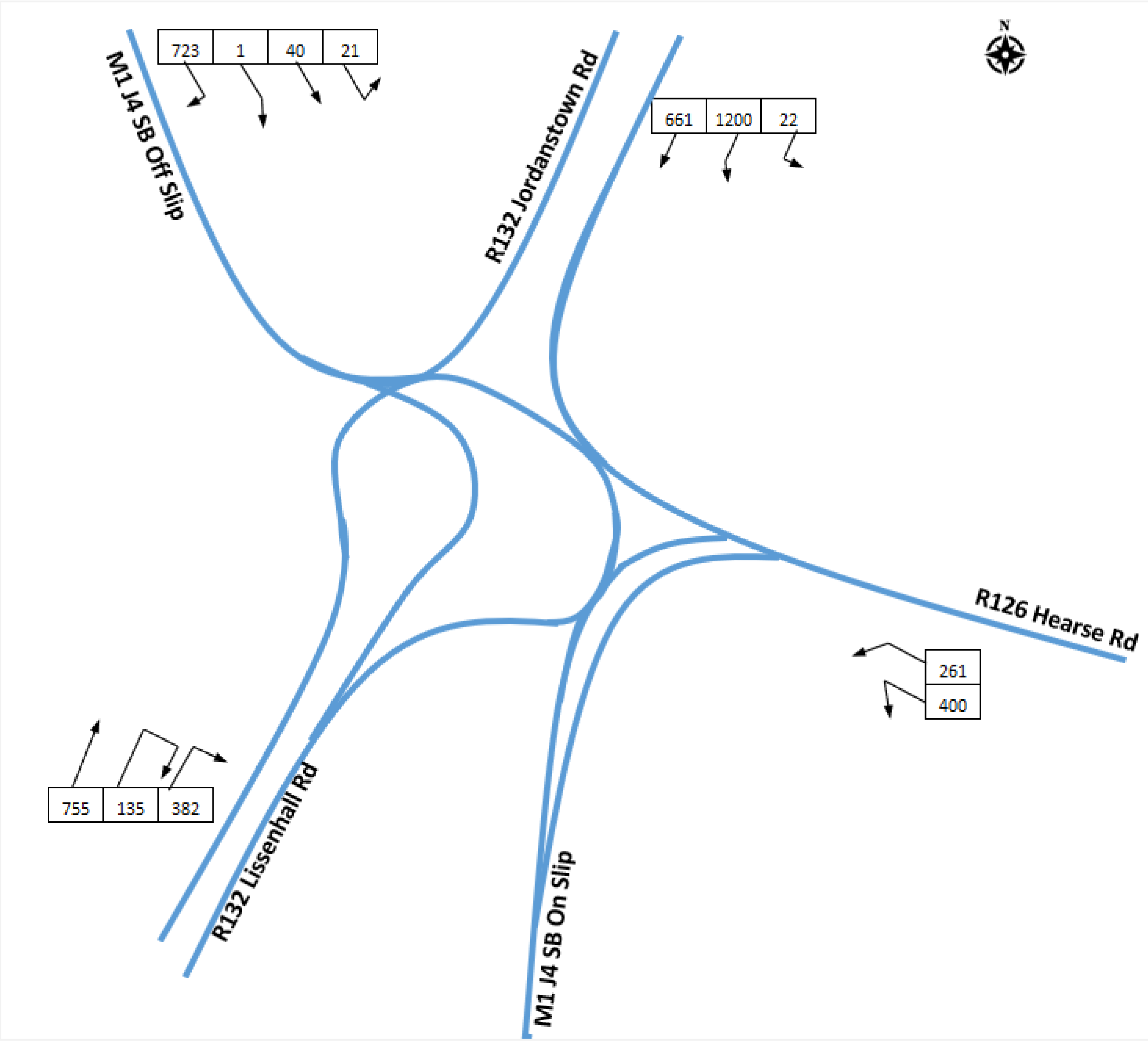


Figure 7.1: Northern Lissenhall Junction AM 2018 Baseline Flows

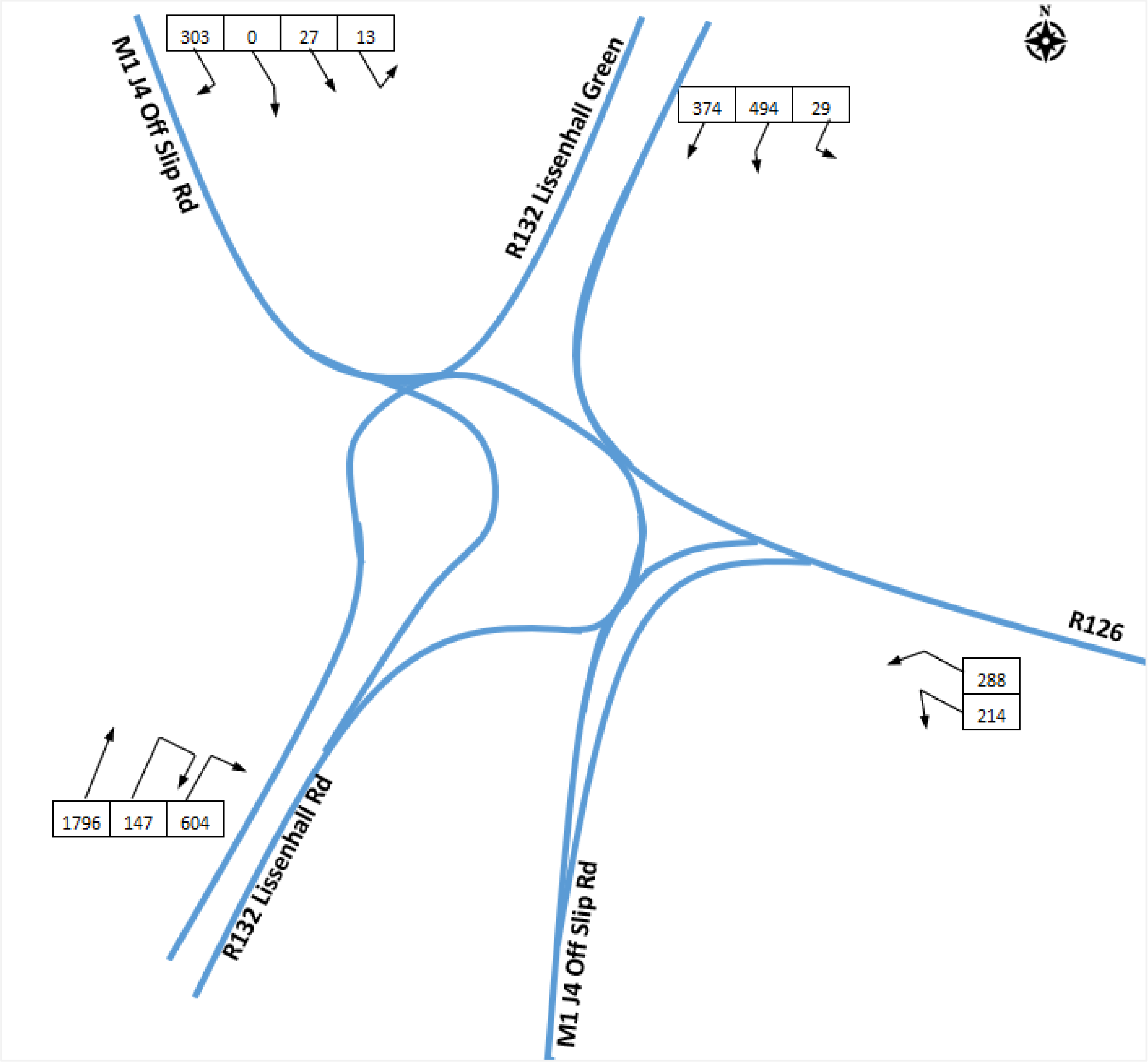


Figure 7.2: Northern Lissenhall Junction PM 2018 Baseline Flows

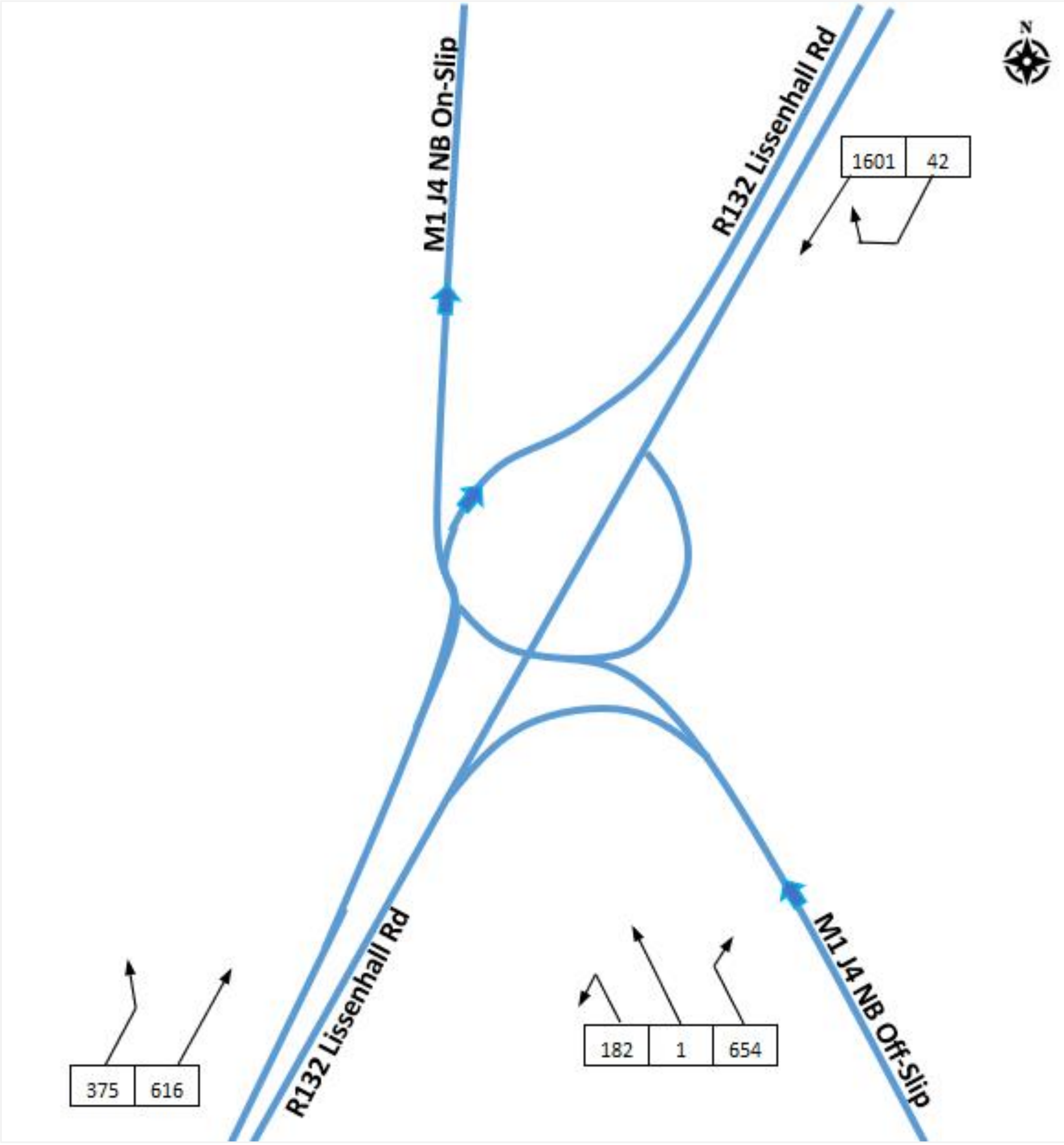


Figure 7.3: Southern Lissenhall Junction AM 2018 Baseline Flows

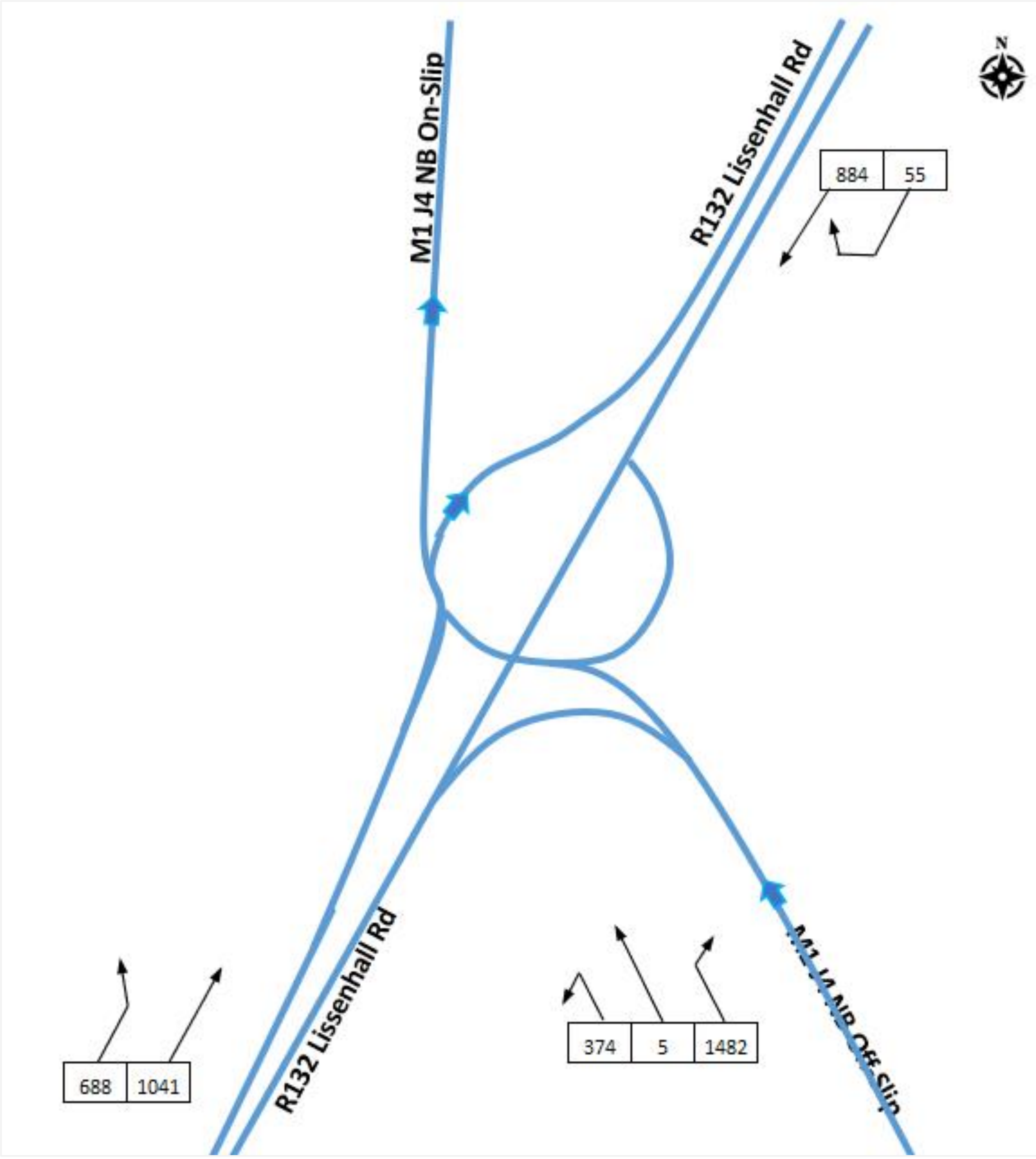


Figure 7.4: Southern Lissenhall Junction PM 2018 Baseline Flows

A.2 Projected 2035 + Operational Traffic

M1 Junction 4 Lissenhall Junction

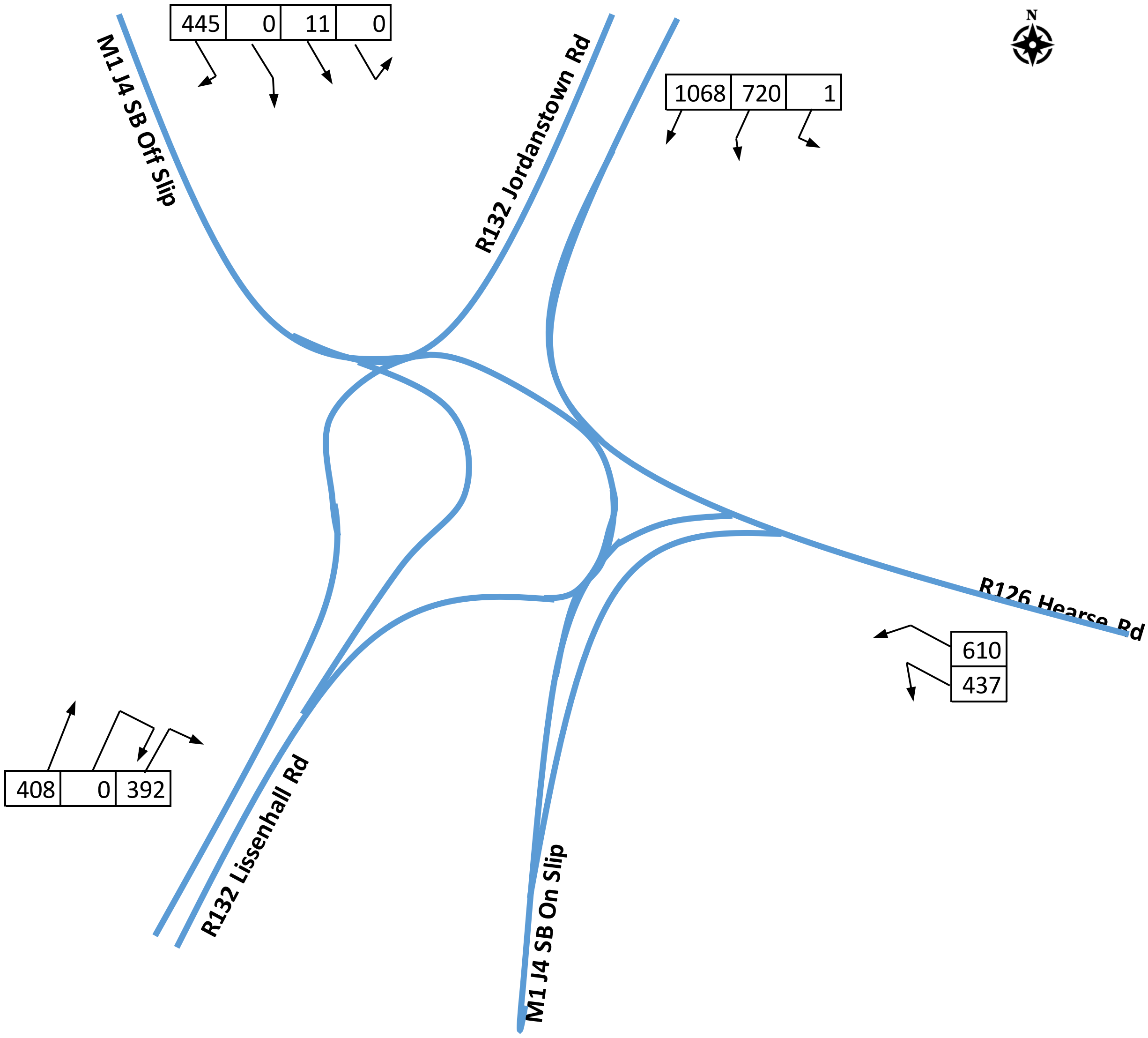


Figure 7.5: Northern Lissenhall Junction – AM Projected 2035 + Operational Traffic Flows

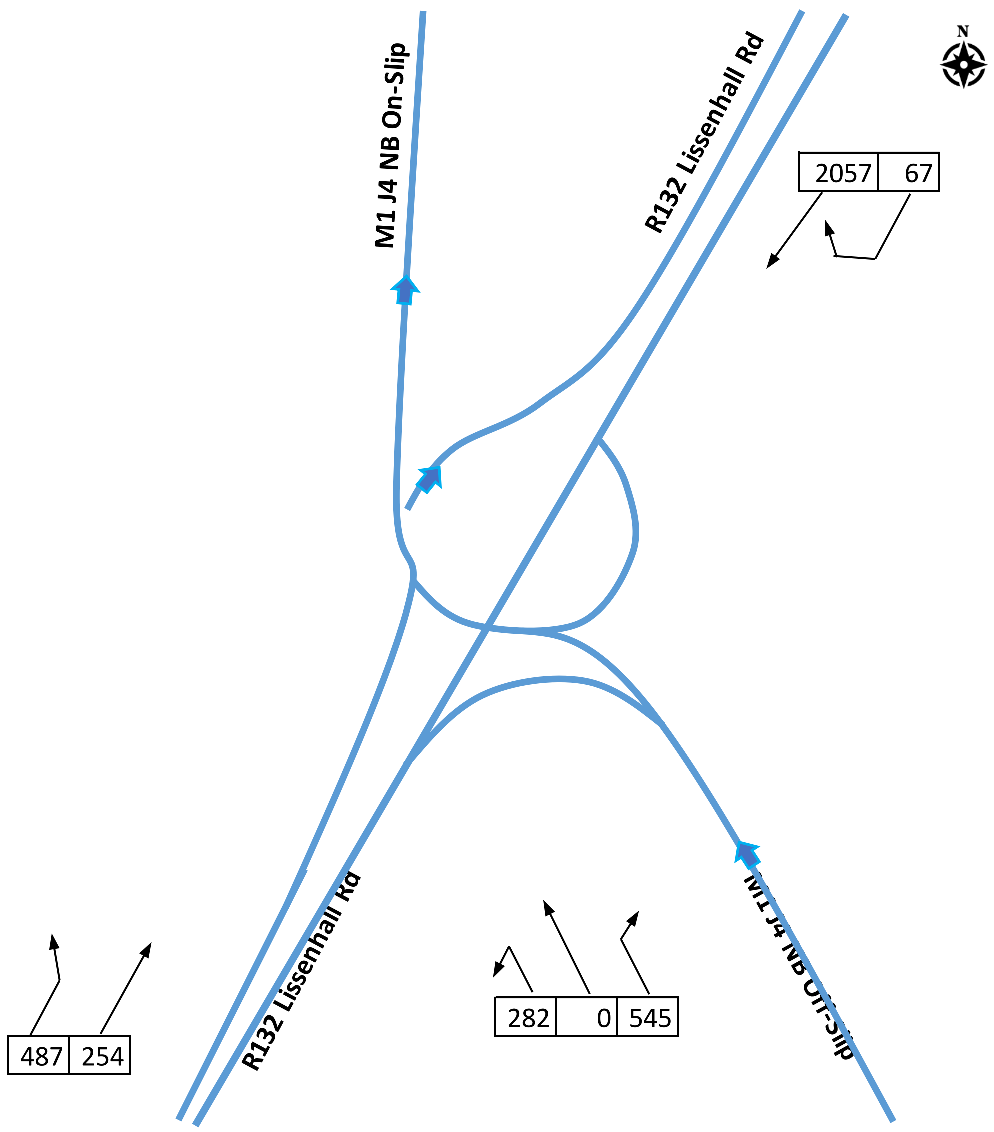


Figure 7.6: Southern Lissenhall Junction – AM Projected 2035 + Operational Traffic Flows

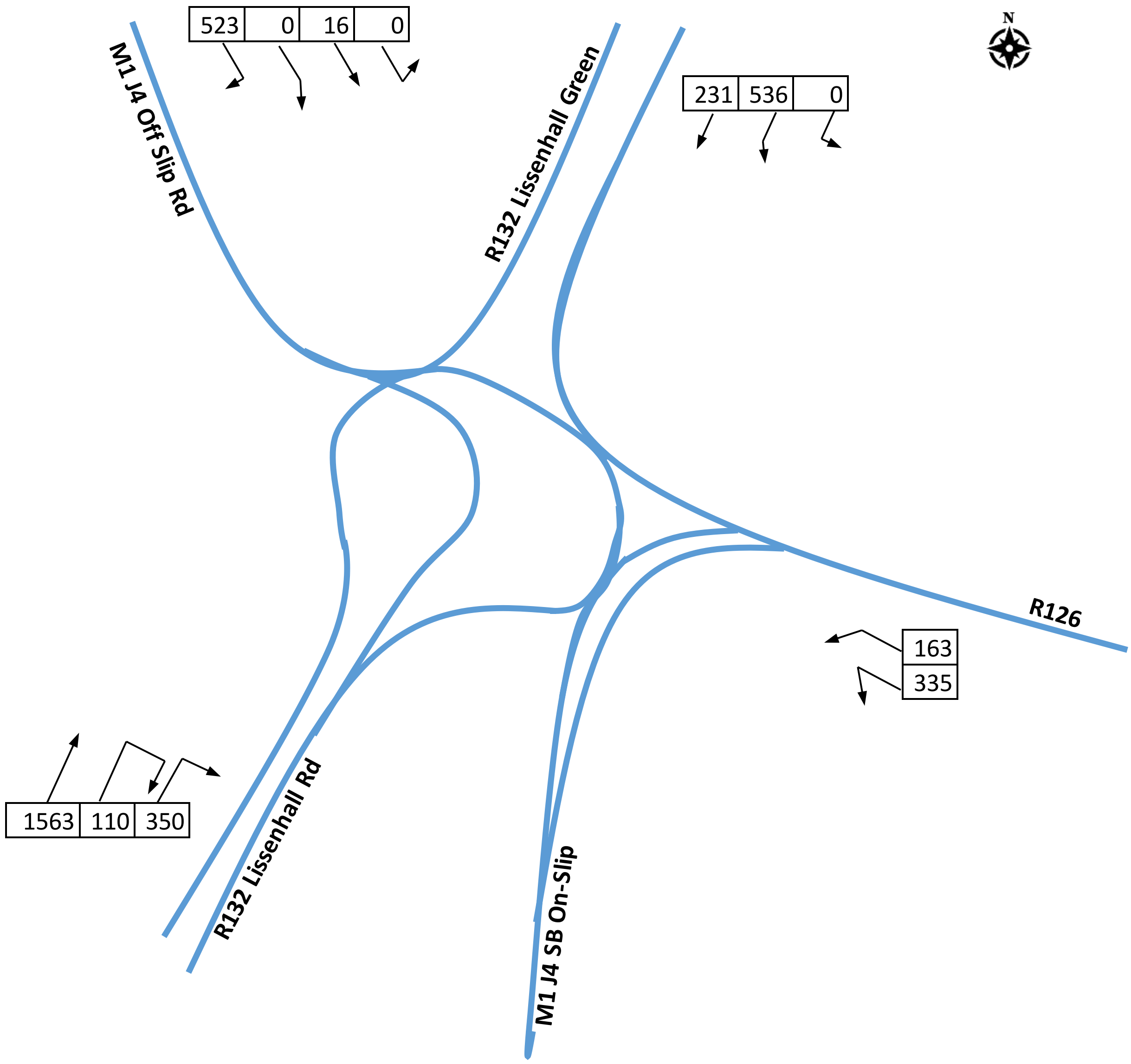


Figure 7.7: Northern Lissenhall Junction – PM Projected 2035 + Operational Traffic Flows

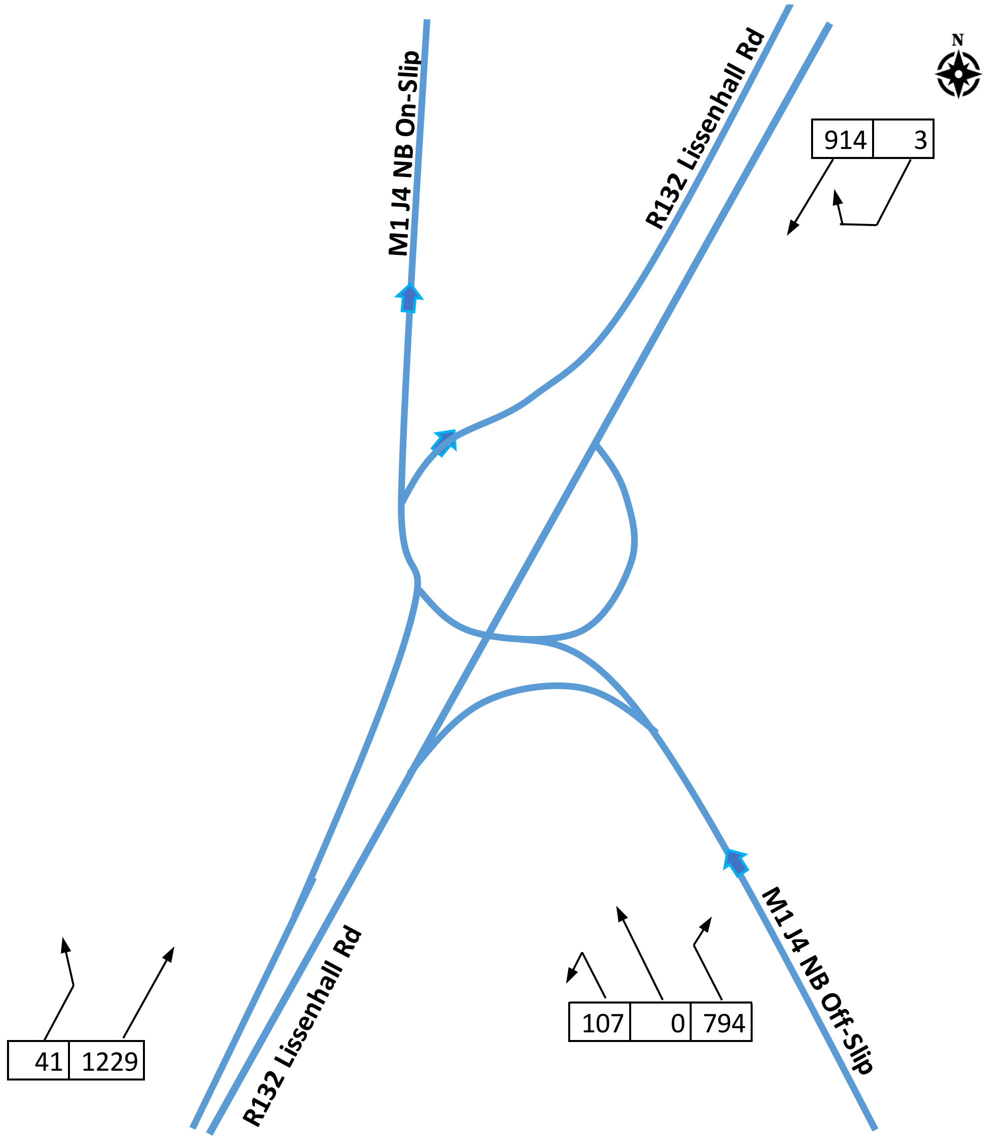


Figure 7.8: Southern Lissenhall Junction – PM Projected 2035 + Operational Traffic Flows

Proposed Estuary Park and Ride Accesses 2035 'Operational Phase'

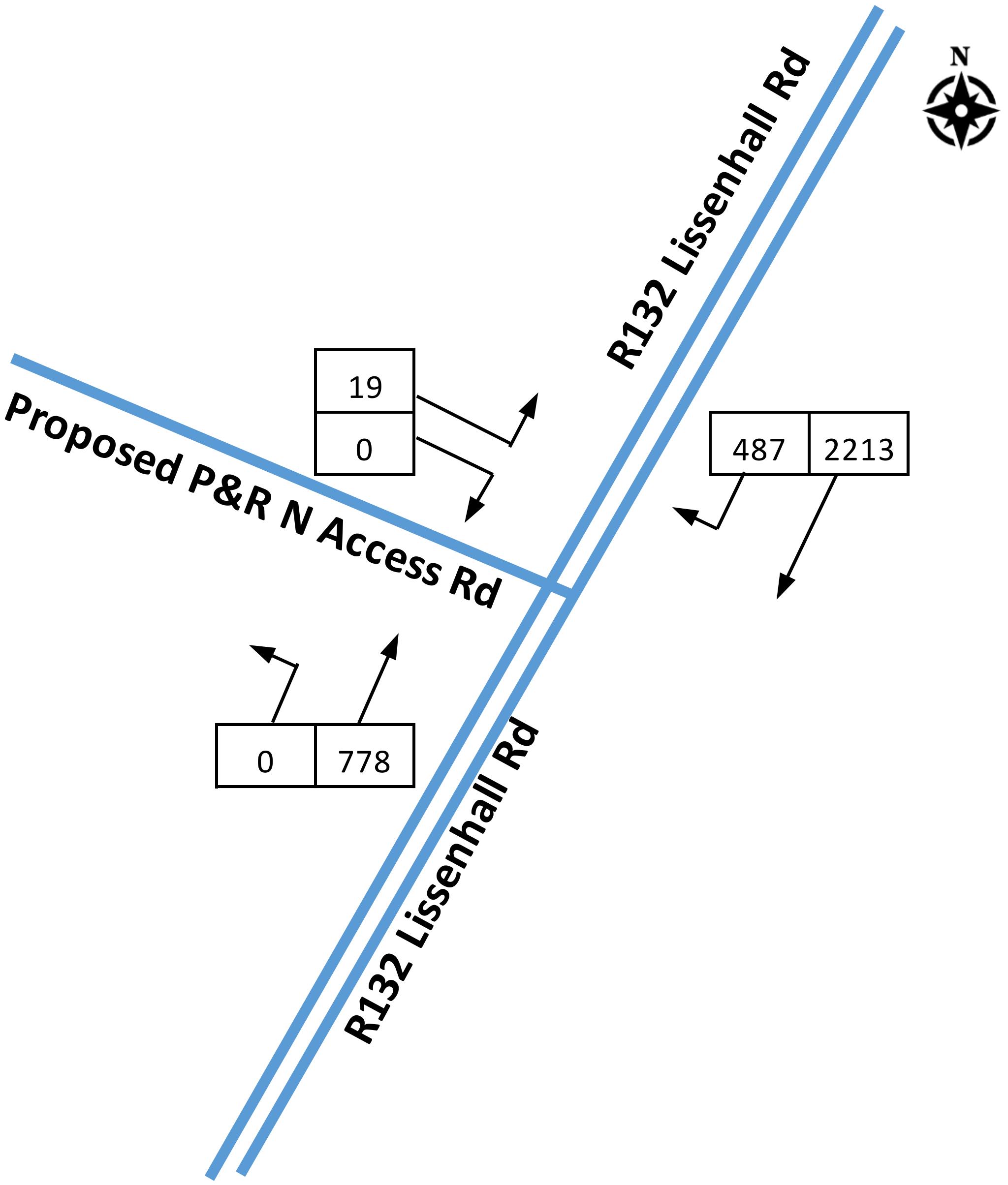


Figure 7.9: Proposed Estuary Park and Ride North Access – AM Projected 2035 + Operational Traffic Flows

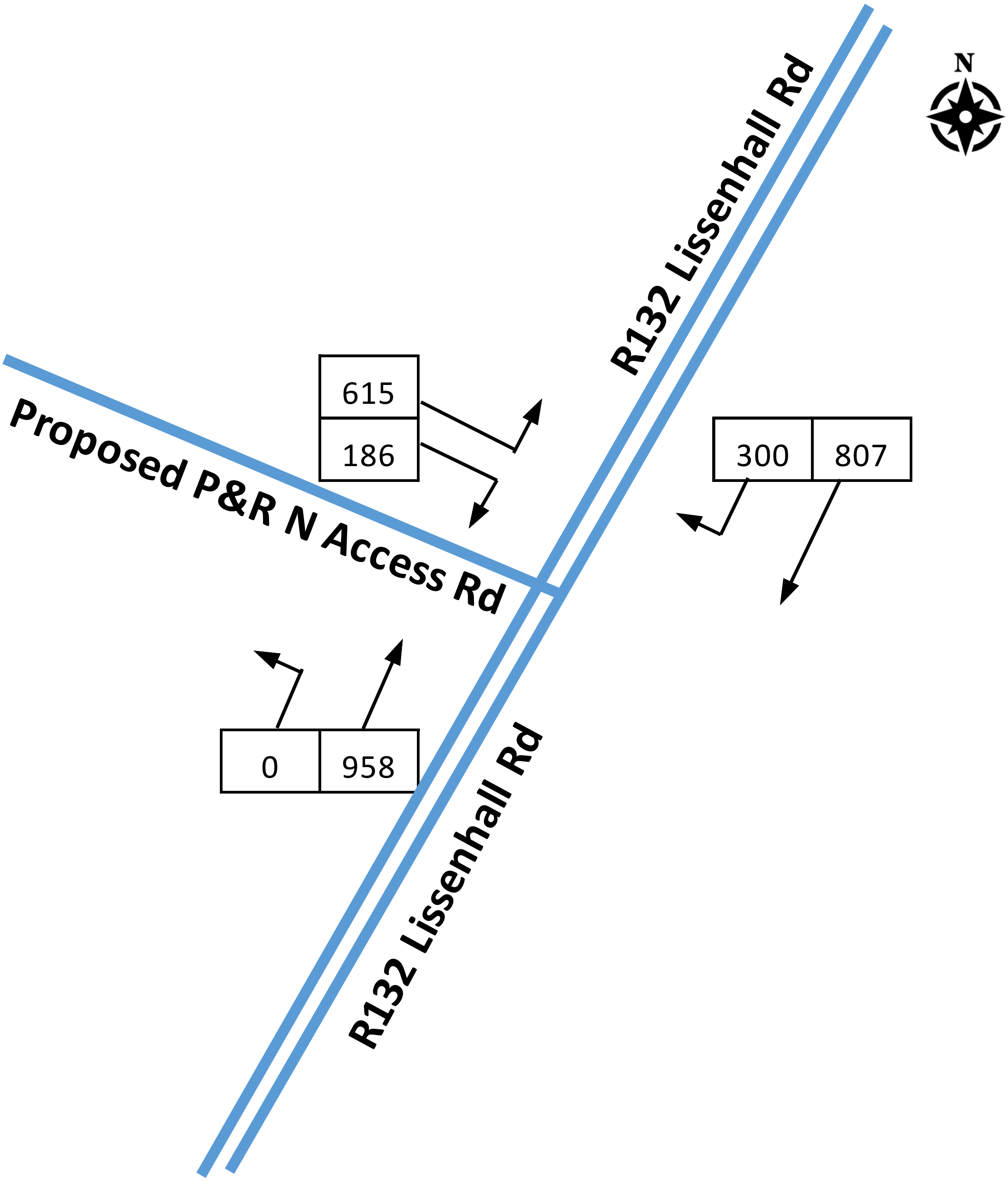


Figure 7.10: Proposed Estuary Park and Ride North Access – PM Projected 2035 + Operational Traffic Flows

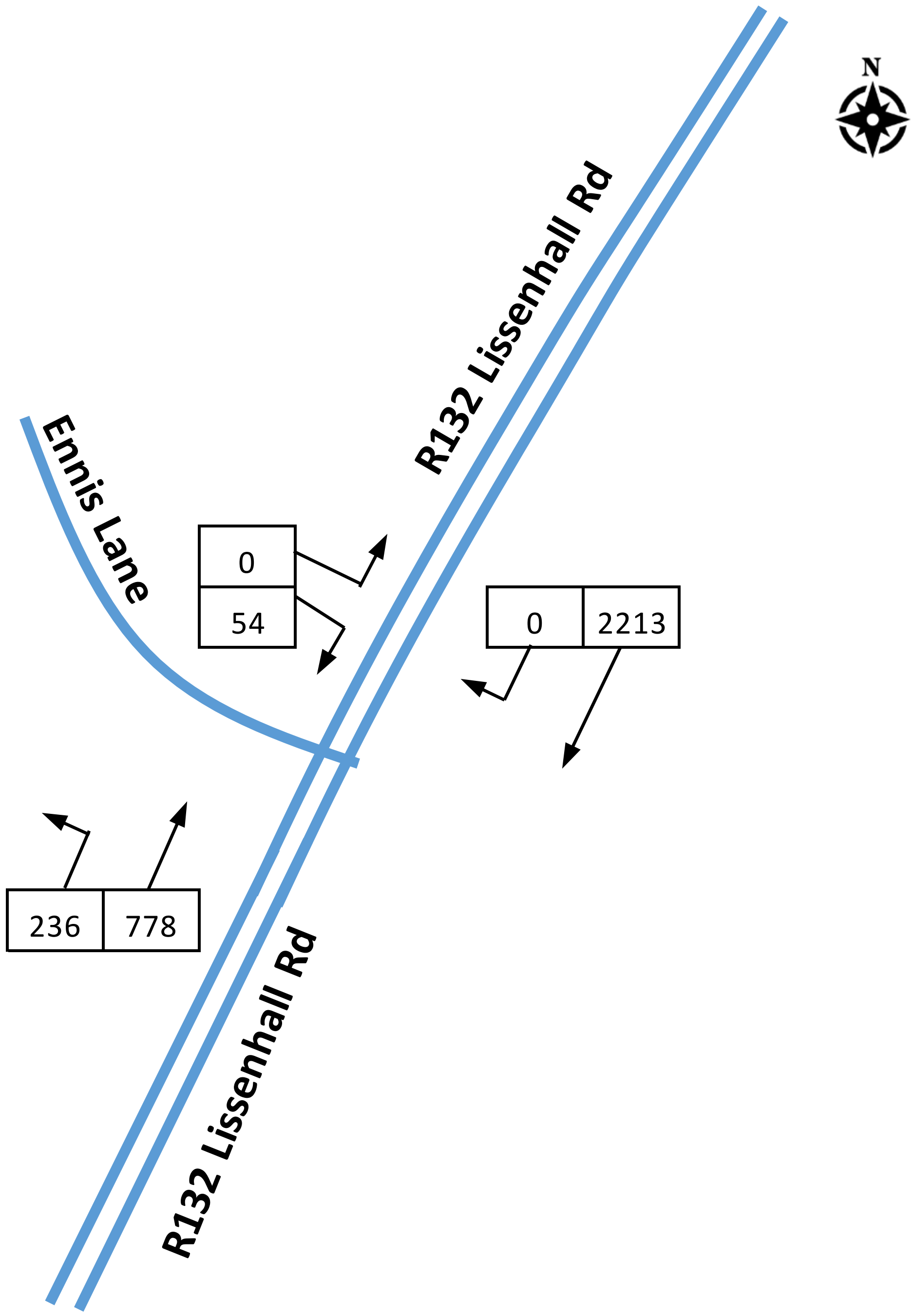


Figure 7.11: Proposed Estuary Park and Ride South Access – AM Projected 2035 + Operational Traffic Flows

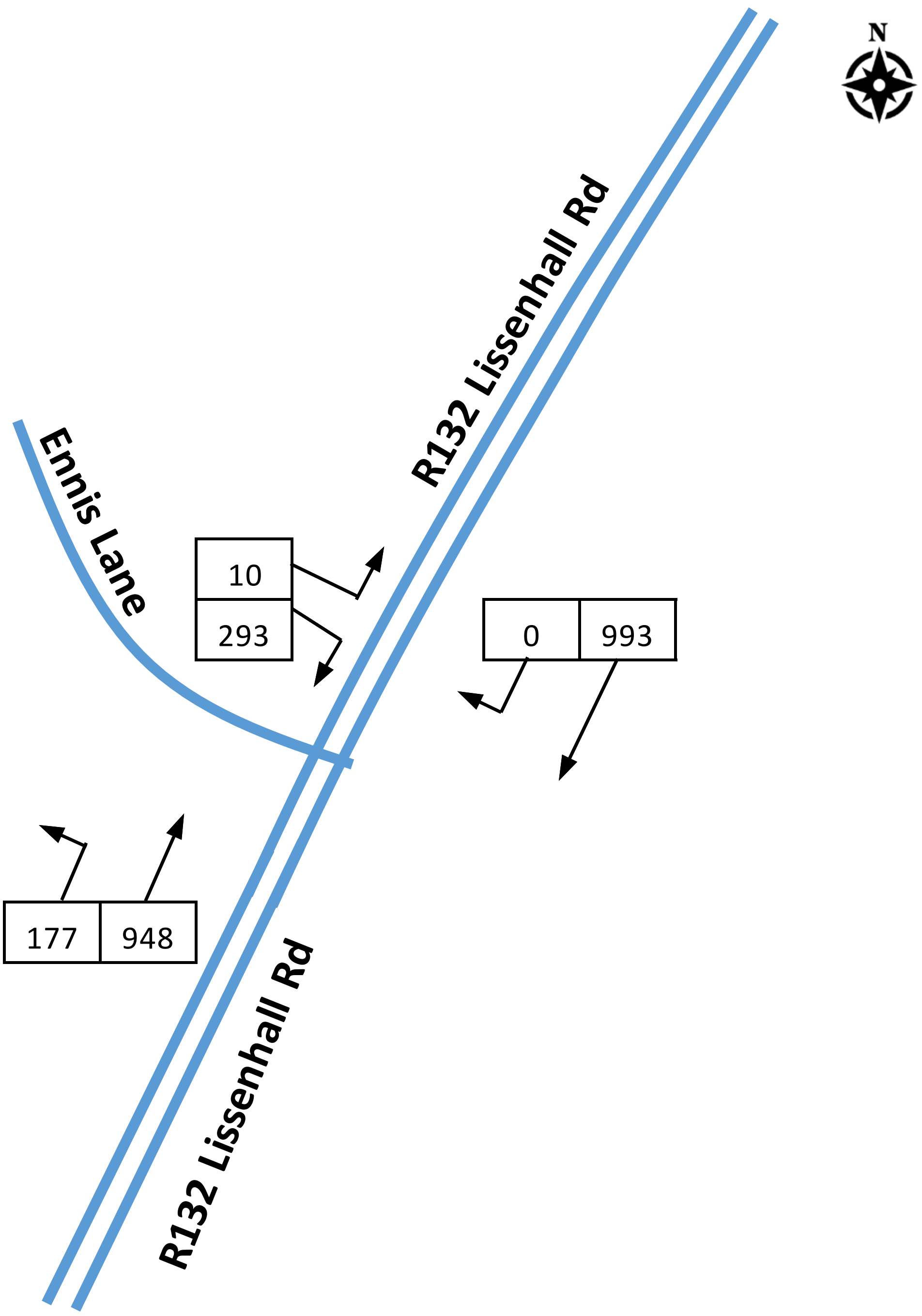


Figure 7.12: Proposed Estuary Park and Ride South Access – PM Projected 2035 + Operational Traffic Flows

A.3 Projected 2050 + Operational Traffic

M1 Junction 4 Lissenhall Junction

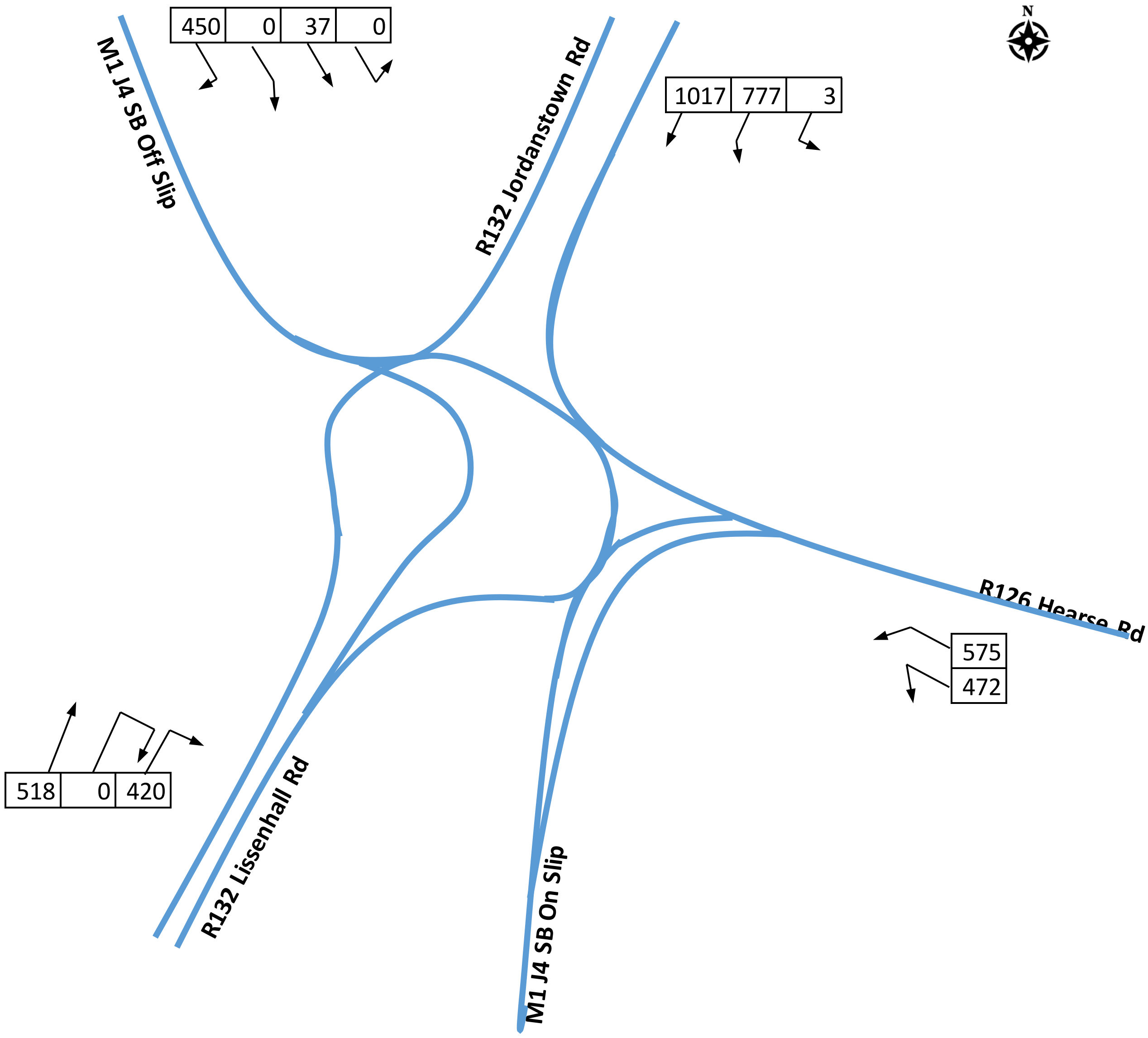


Figure 7.13: Northern Lissenhall Junction – AM Projected 2050 + Operational Traffic Flows

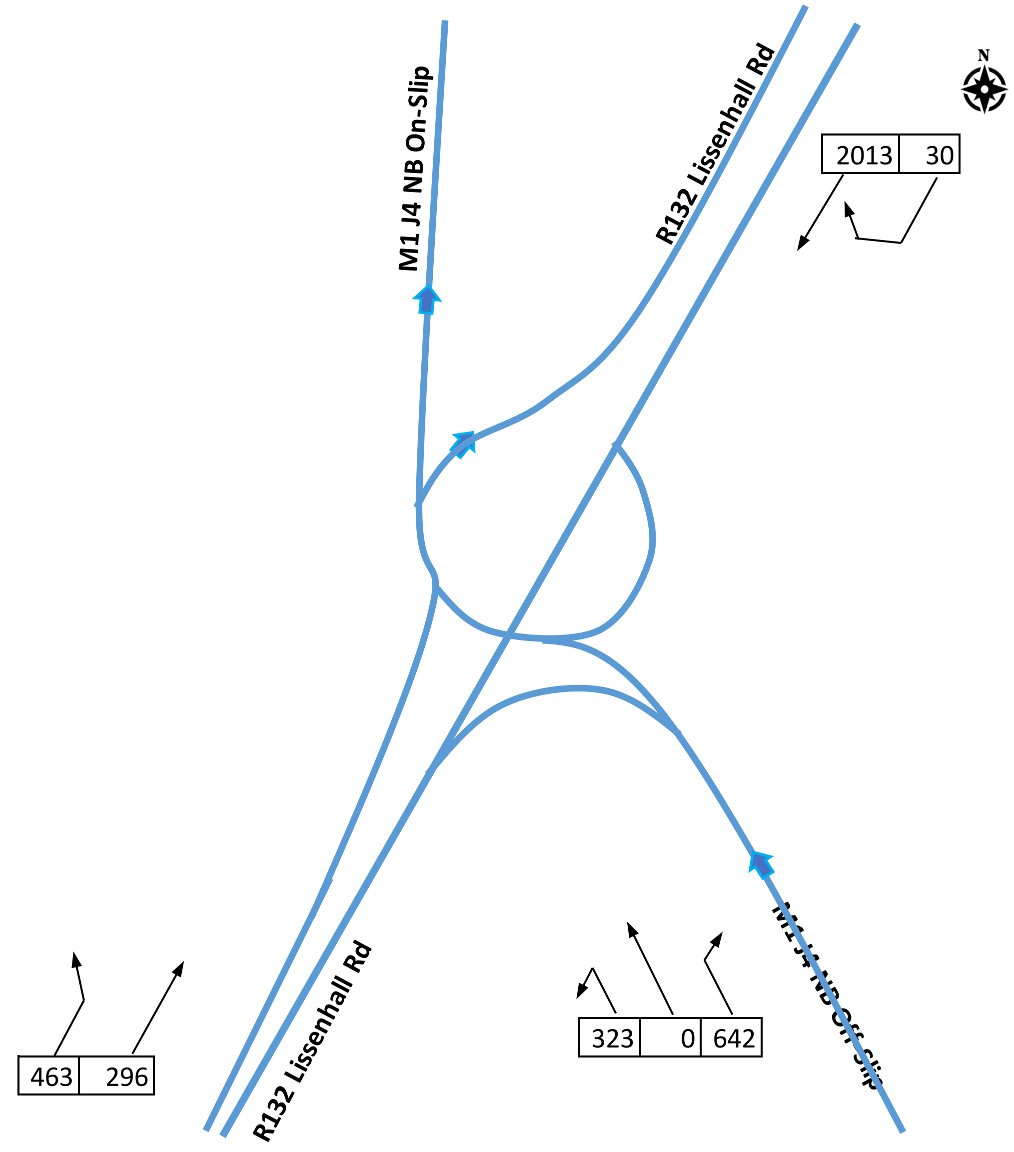


Figure 7.14: Southern Lissenhall Junction – AM Projected 2050 + Operational Traffic Flows

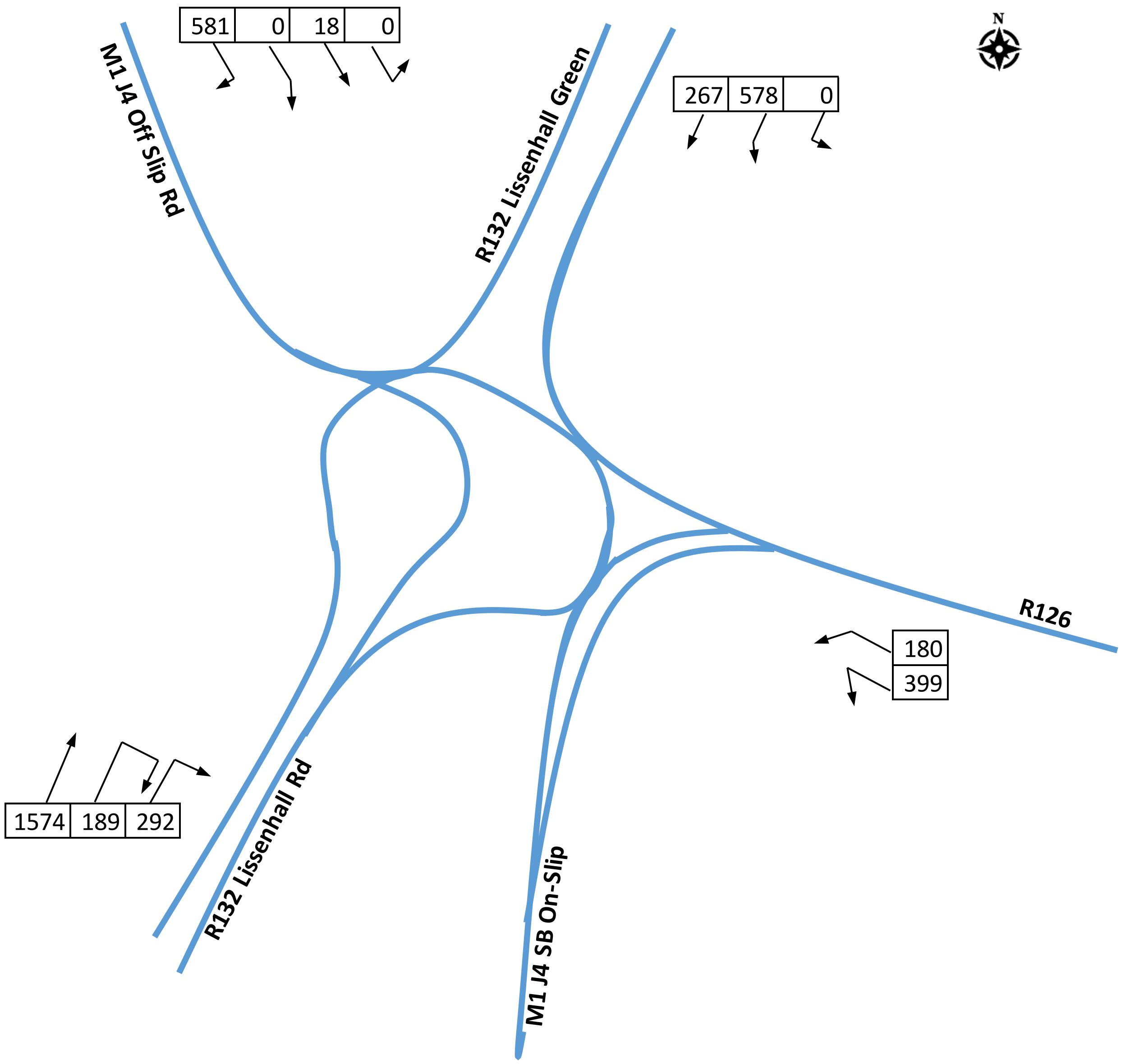


Figure 7.15: Northern Lissenhall Junction – PM Projected 2050 + Operational Traffic Flows

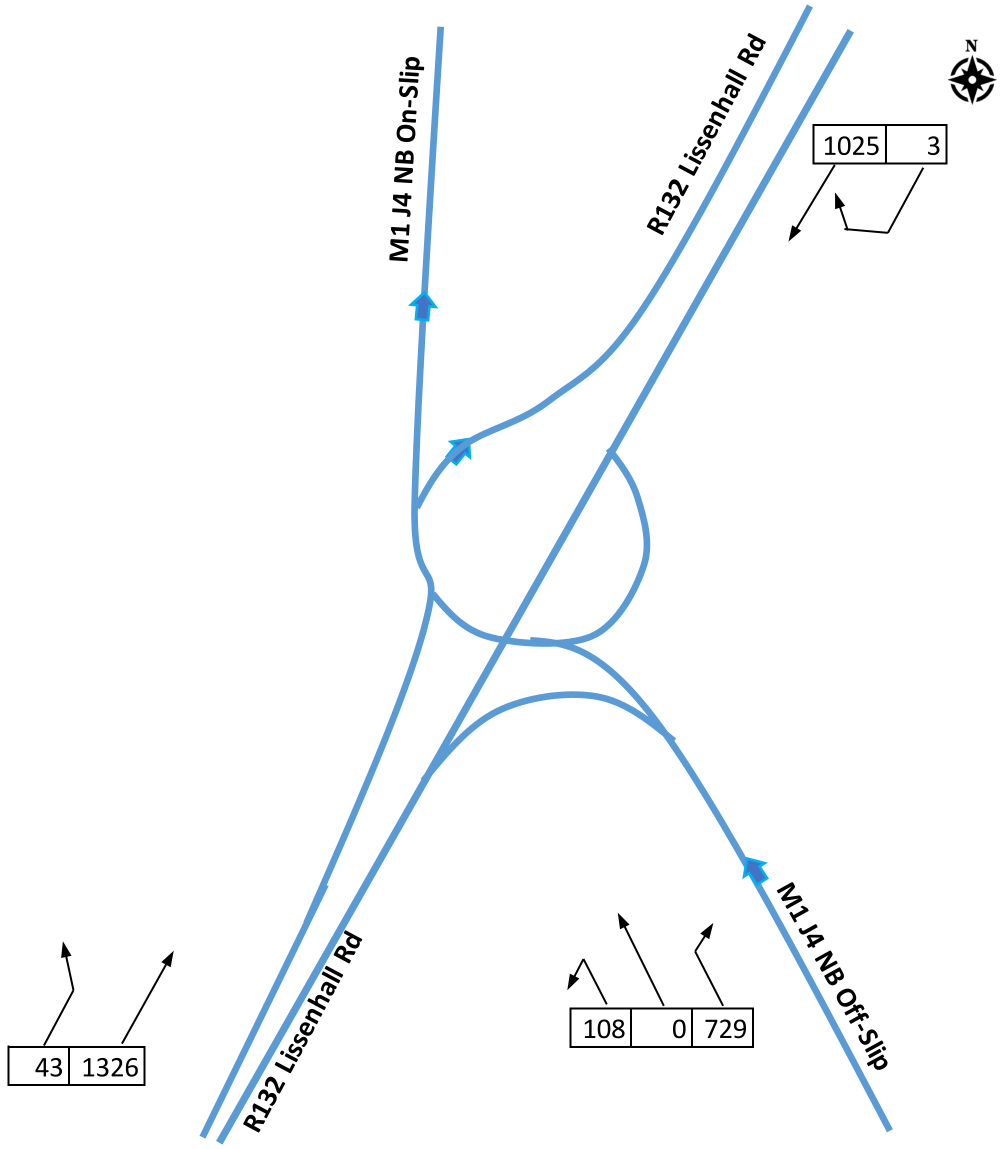


Figure 7.16: Southern Lissenhall Junction – PM Projected 2050 + Operational Traffic Flows

Proposed Estuary Park and Ride Accesses 2050 ‘Operational Phase’

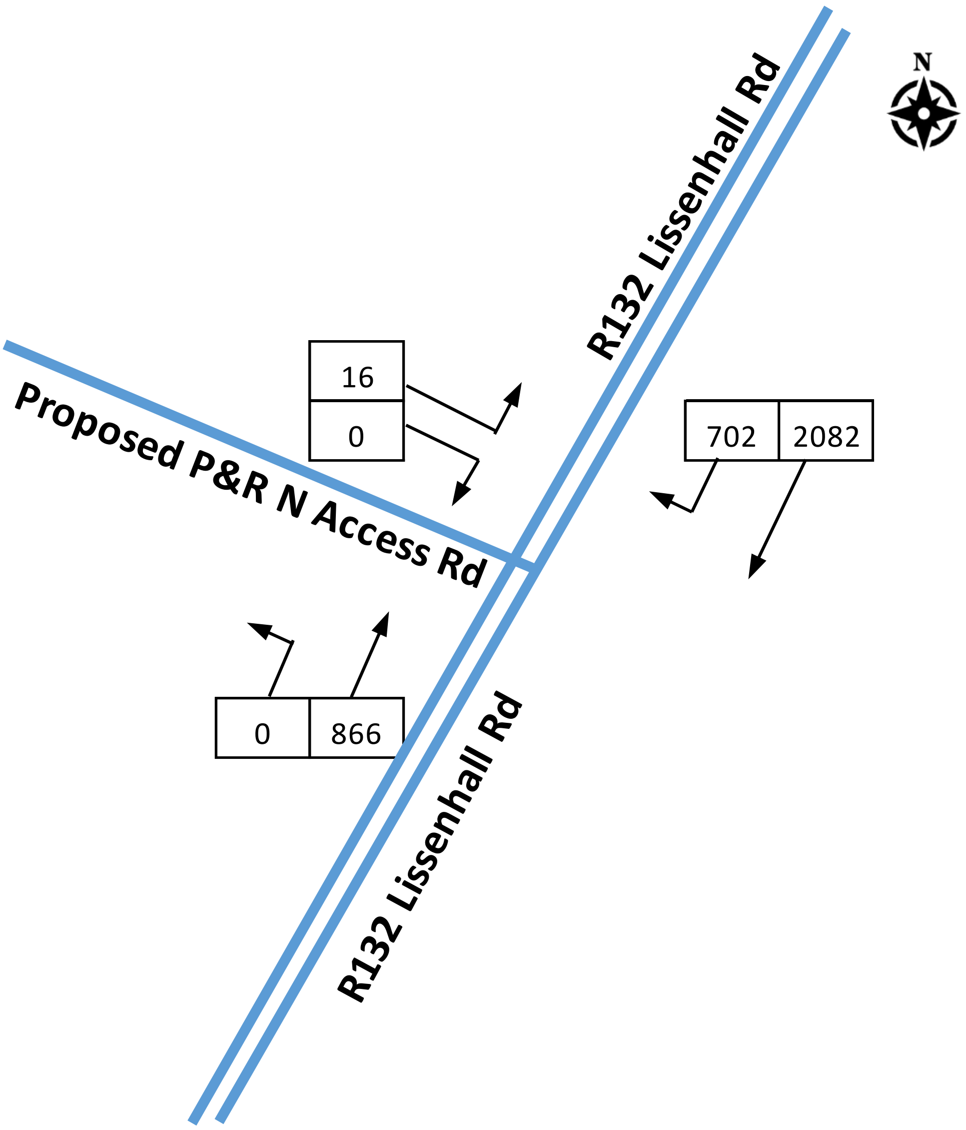


Figure 7.17: Proposed Estuary Park and Ride North Access – AM Projected 2050 + Operational Traffic Flows

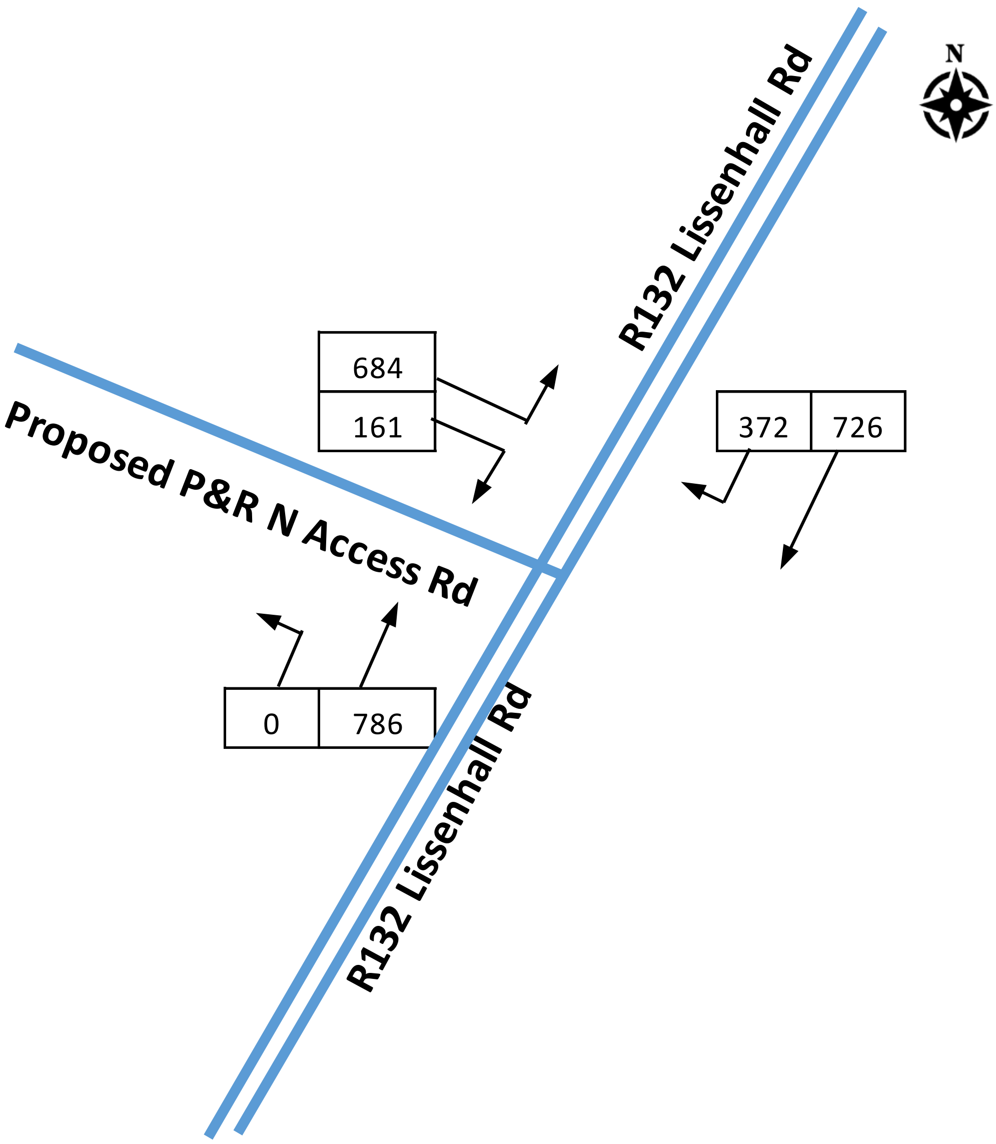


Figure 7.18: Proposed Estuary Park and Ride North Access – PM Projected 2050 + Operational Traffic Flows

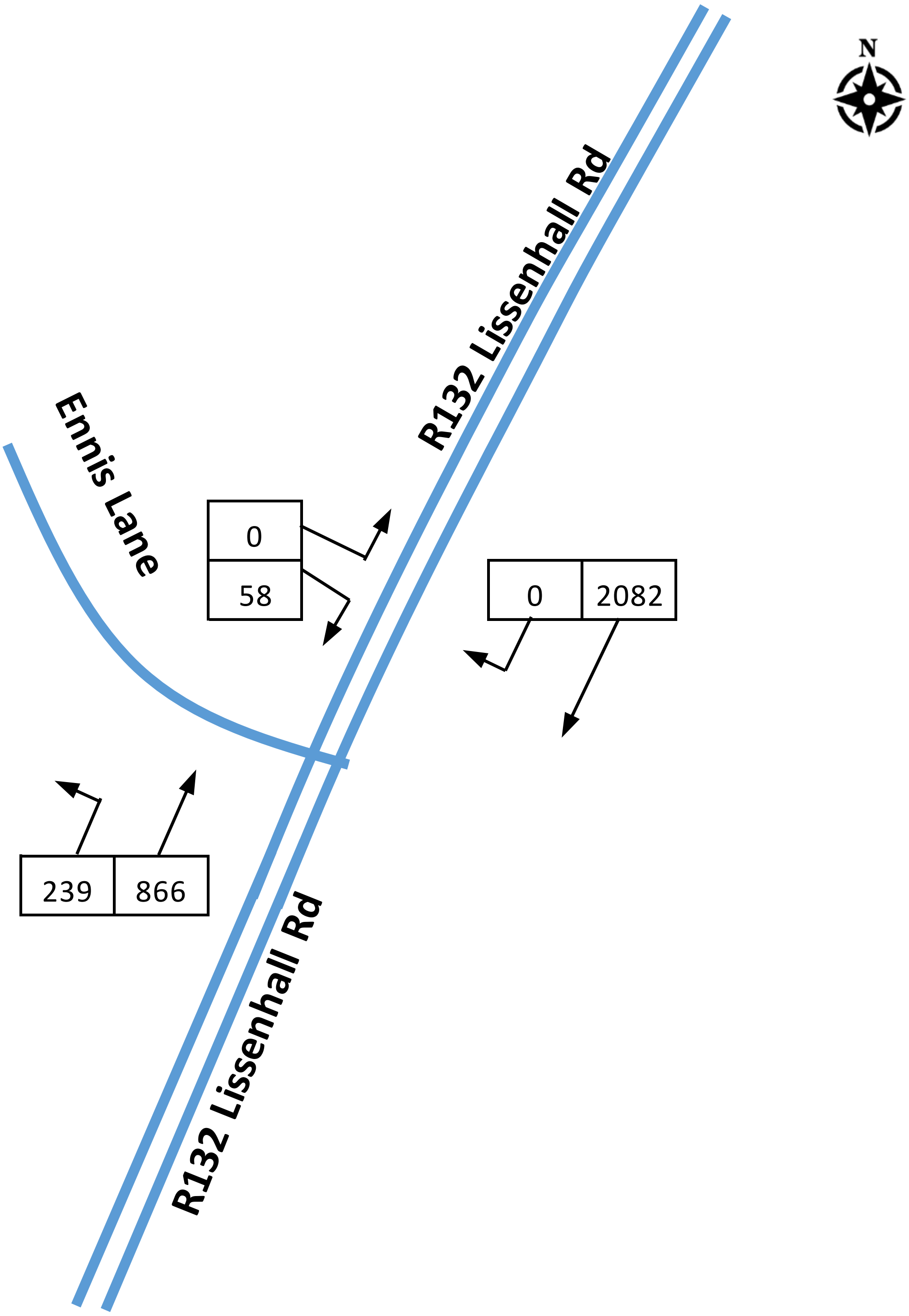


Figure 7.19: Proposed Estuary Park and Ride South Access – AM Projected 2050 + Operational Traffic

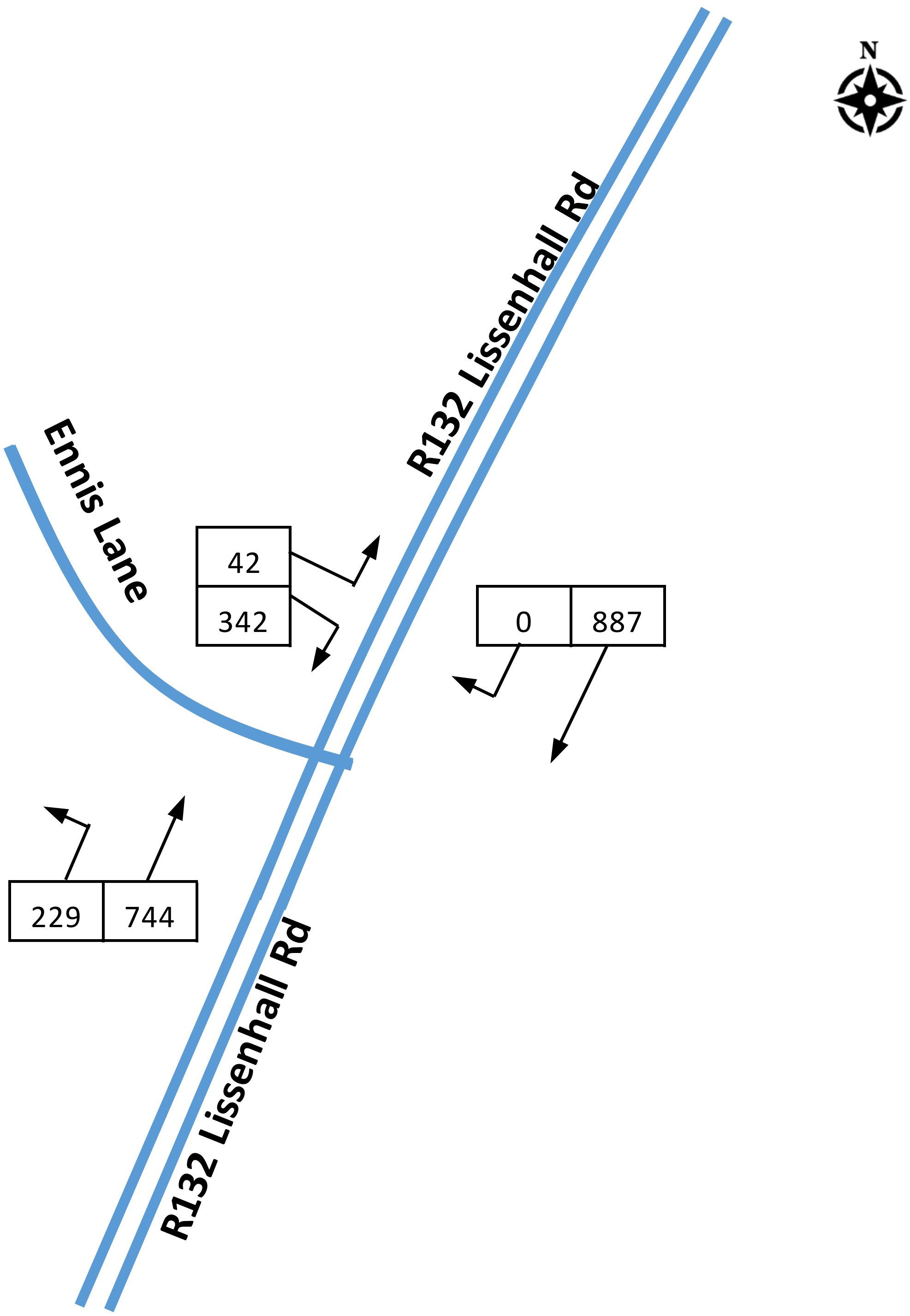


Figure 7.20: Proposed Estuary Park and Ride South Access – PM Projected 2050 + Operational Traffic Flows

Contents

1. Introduction

1.1 Background

Jacobs/IDOM has been commissioned to undertake the Environmental Impact Assessment Report (EIAR) in support of the proposed Dublin MetroLink Project (hereafter referred to as the proposed Project). The EIAR is being prepared to assess the environmental impacts of the proposed Project, including in relation to traffic and transport.

This Traffic and Transportation Assessment (TTA) assesses the operational impacts associated with the proposed Seatown Station on the Traffic and Transport network in the local area. TTA's have been prepared for each individual station as well as an overall TTA for the proposed Project.

Jacobs/IDOM has also been commissioned to undertake a scheme traffic management plan (STMP). The STMP is a standalone report within the EIAR. The STMP assesses the impact of the construction of the Project on all road users and proposes mitigation measures where appropriate.

A summary of the TTAs and STMP will be included within the Traffic and Transportation chapter of the EIAR.

1.2 Assessment Scenarios

In order to provide a rounded assessment of the Project, its impacts have been reviewed for a range of future years, and in the context of two alternative future scenarios. The forecast years are 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). As outlined in Table 1.1, Scenario A includes the Project and committed transport schemes only, while Scenario B includes a range of further planned schemes depending on the forecast year.

Table 1.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project
Do Minimum Scenario	Committed transport schemes in the absence of the Project
Do Something - Scenario A	Scenario with the Project and committed transport schemes only
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for Opening year (2035) and planned schemes under the Transport Strategy for the GDA for the Design Year (2050) and the Forecast Year (2065)

Committed transport schemes in the Do Minimum scenario and in Scenario A, that have been progressed through planning and are either under construction or are programmed into the capital expenditure budget, include, but are not limited to:

- Luas Green Line Capacity Enhancement – Phase 1;
- BusConnects Dublin Area Bus Network Redesign; and
- Dublin BusConnects Fares and Ticketing.

Scenario B represents the likely future receiving environment and is based on the delivery of the schemes identified within the National Development Plan for 2035, and on the implementation of the NTA's Greater Dublin Area (GDA) Transport Strategy for 2050 and 2065. As such, this scenario considers the cumulative impacts of interactions between other projects that are most likely to impact on transport movements in the area. Schemes included in this scenario are, but are not limited to:

- Luas Green Line Capacity Enhancement - Phase 2;
- Luas Finglas;
- Luas Lucan;
- Dublin BusConnects Core Bus Corridors (planned 16 corridors); and
- DART+.

More information on each modelled scenario is available in the Transport Modelling Plan (Appendix A9.3).

1.3 Project Overview

The Project will be a high-capacity, high frequency rail line running from Swords to Charlemont, linking Dublin Airport, Irish Rail, the Dublin Area Rapid Transit (DART), Dublin Bus and Luas services, improving integration across public transport network in the Greater Dublin Area (GDA).

As well as linking major transport hubs, the Project will connect key destinations including Swords, Ballymun, the Mater Hospital, the Rotunda, Dublin City University and Trinity College with much of the 19-kilometre route running underground.

When operations commence, there will be trains every 3 minutes during peak periods. This can rise to a service every 90 seconds, with the system capable of carrying a peak line flow of 20,000 passengers per hour in each direction.

1.3.1 Seatown Station

The proposed Seatown Station is shown in Figure 1.1. It is located to the immediate south of Seatown Road Roundabout and is in close proximity to Swords Business Park and North Dublin Corporate Park. Seatown Park residential area is located to the northeast of the station, while the station will also serve a variety of land uses in the northern portion of Swords.

There are two stair entrances to the platform, and two passenger lifts proposed for Seatown Station. In addition, 480 bicycle parking spaces are proposed for this station. Interchange with other modes of public transport will be possible through the provision of the proposed Bus Network Redesign routes, a number of which will serve the vicinity of the Seatown Station.

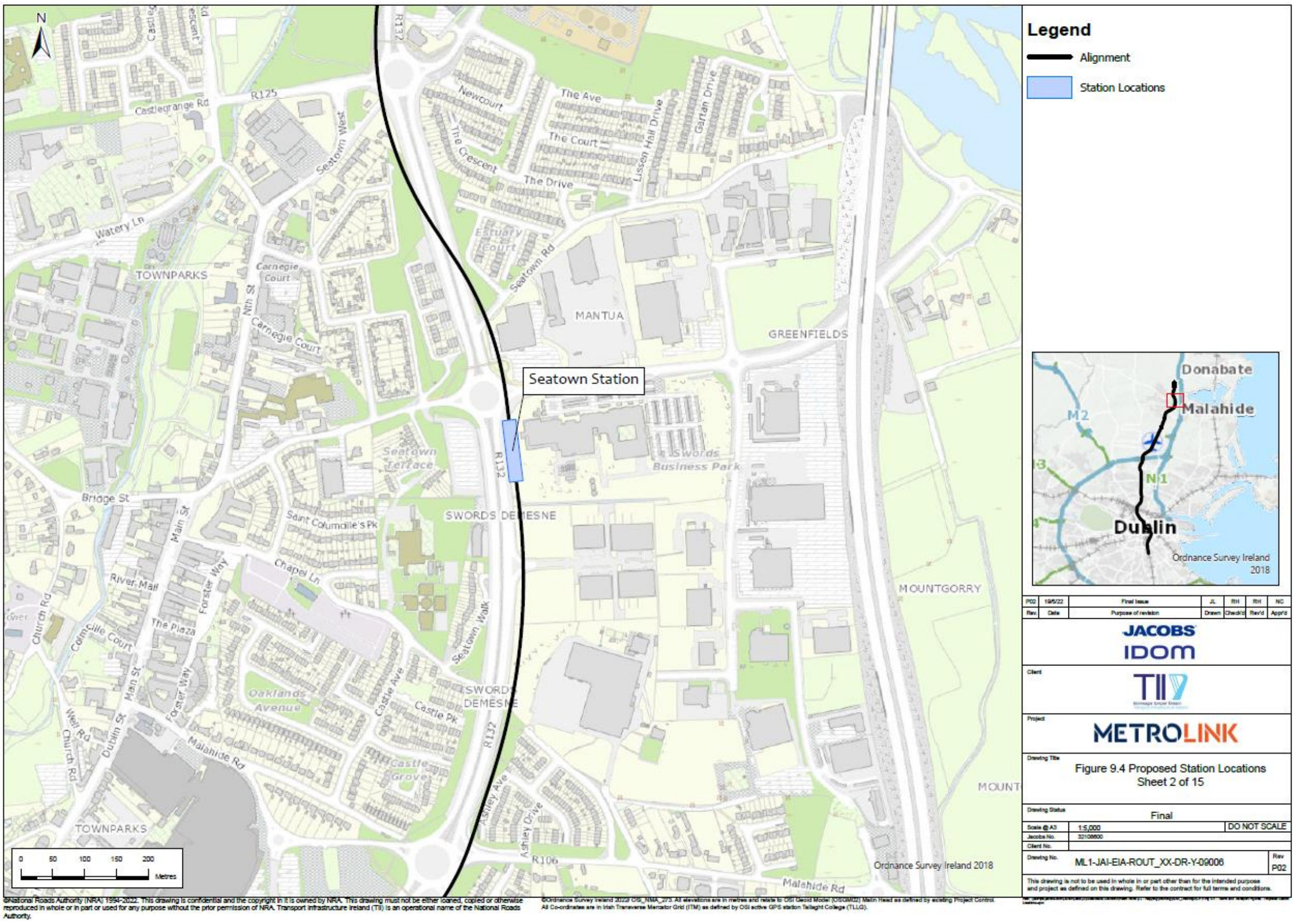


Figure 1.1: Proposed Seatown Station Location

2. Policy Context

Reference should be made to the Chapter 3 of the Overall Project TTA, and Planning Policy Report (ML1-JAI-PLD-ROUT_XX-RP-Y-00020) for further detail on the overall project in relation to key national and regional policies.

This section assesses the Seatown Station proposals in relation to the following key local policies:

- Fingal Development Plan 2017-2023;
- Swords Development Strategy; and
- Your Swords: An Emerging City, Strategic Vision 2035.
- Draft Fingal County Council Development Plan 2023-2029; and
- South Fingal Transport Study 2019.

2.1 Fingal Development Plan 2017-2023

2.1.1 Swords Development Strategy

The Fingal Development Plan 2017-2023 provides for significant economic and population growth in Swords, Fingal's 'administrative capital'. A long term development strategy for Swords 'Your Swords: An Emerging City, Strategic Vision 2035' was published by Fingal County Council in 2008 (Fingal Development Plan, FCC), in which the vision is 'to promote and facilitate the sustainable development of Swords Town as a vibrant consolidated major town with a thriving economy; an integrated public transport network; and attractive and highly accessible built environment with the highest standards of housing, employment, services, recreational amenities and community facilities.'

The Development Strategy set out in the plan for Swords is as follows:

- Provide for a much-expanded employment, retail, commercial, educational, civic, and cultural base.
- Develop high quality public transport links to Dublin City, Dublin Airport and the GDA, with particular emphasis on the indicative route for New Metro North (now called MetroLink).
- Target and facilitate the development of high tech and advanced manufacturing and other high intensity employment generating uses and service providing uses.
- Promote the development of high-quality living and working environments.
- Develop Swords in the long term in accordance with 'Your Swords: an Emerging City, Strategic Vision 2035'. This strategic vision is contingent on the indicative route for New Metro North (now called MetroLink) coming to Swords.
- Promote lands at Lissenhall as a longer-term strategic area, a mixed-use urban district providing for significant levels of employment and residential development.

2.1.2 Your Swords: An Emerging City, Strategic Vision 2035

'Your Swords: An Emerging City, Strategic Vision 2035' provides the background and assessment of options developed by Fingal County Council to support the future growth and development of Swords. This document was considered in the compilation of the Swords Masterplan.

The Strategic Vision ensures that Swords will incorporate and be synonymous with:

- A Green City – in terms of the physical landscape and sustainable environmental objectives.
- An Integrated Transport Strategy, comprising significant public transport services (including Metro North (now called MetroLink), and local and regional bus services) and strategically important road infrastructure.

The strategy envisages the Metro North Economic Corridor (MNEC), along the Metro North alignment (now called MetroLink), facilitating opportunities for high-density, mixed-use, and employment-generating activities, as well as for commercial and residential development. The designated sites for development will form sustainable districts with high connectivity and accessibility and will be provided with the necessary infrastructure.

2.2 Draft Fingal County Council Development Plan 2023 - 2029

Building on the objectives of the Fingal County Council Development Plan 2017-2023, the Draft Fingal County Council Development Plan 2023-2029 recognises the role the delivery of MetroLink will play in connecting Swords to the Dublin City Centre, and the Dublin Airport. Swords is identified as a Key Town within the Development Plan, and the implementation of MetroLink will assist in meeting policies and objectives set out in the Development Plan.

Policy CSP28 – Promote and Facilitate MetroLink

- Promote and facilitate the development of Metrolink, connecting Swords to Dublin Airport and on to Dublin City Centre.

Objective CSO39 – Swords – Dublin Airport

- Support Swords-Dublin Airport as a key location for airport related economic development and employment provision linked to the protection and enhancement of access to Dublin Airport lands including the delivery of Metrolink.

2.3 South Fingal Transport Study 2019

In September 2017, Fingal County Council commissioned SYSTRA Ltd to undertake the South Fingal Study. The South Fingal Transport Study 'is a study of the transport network in South Fingal recommending key transport infrastructure and outlines the levels of land use development that will enable its sustainable growth leading up to the delivery of MetroLink and beyond' (FCC, 2017). As a result, the study considers the most critical road, public transport and active travel schemes that Fingal should implement in the next decade; sustainable ways of improving Fingal's integration and connectivity with Dublin City Centre; infrastructure required to meet demand in advance of the Project; and measures that Fingal County Council should implement to maintain and protect the strategic function of Dublin Airport into the future.

In this study, Seatown falls under the recommendations for the Swords area, with planned development including the promotion of Swords as Fingal's primary growth centre for residential development and a multimodal transport hub.

It has a number of recommendations including improving the frequency of public transport services, while also unlocking significant potential to increase the level of walking and cycling in Swords.

The recommendations identified with specific reference to the Project include:

- The Swords Western Distributor Road would provide additional resilience to the local network in the context of diverting traffic from Main Street, and in addition to providing direct access to the MetroLink Park and Ride at Estuary;
- Future interchange to the MetroLink from other modes, including bus, walk and cycle should be considered as part of any redevelopment of Swords Main Street and the R132 Swords Bypass; and
- The Swords Western Relief Road is an objective of the Fingal Development Plan with a strategic function to provide a link between the M1/M50 and Dublin Airport to support the long-term growth of Swords.

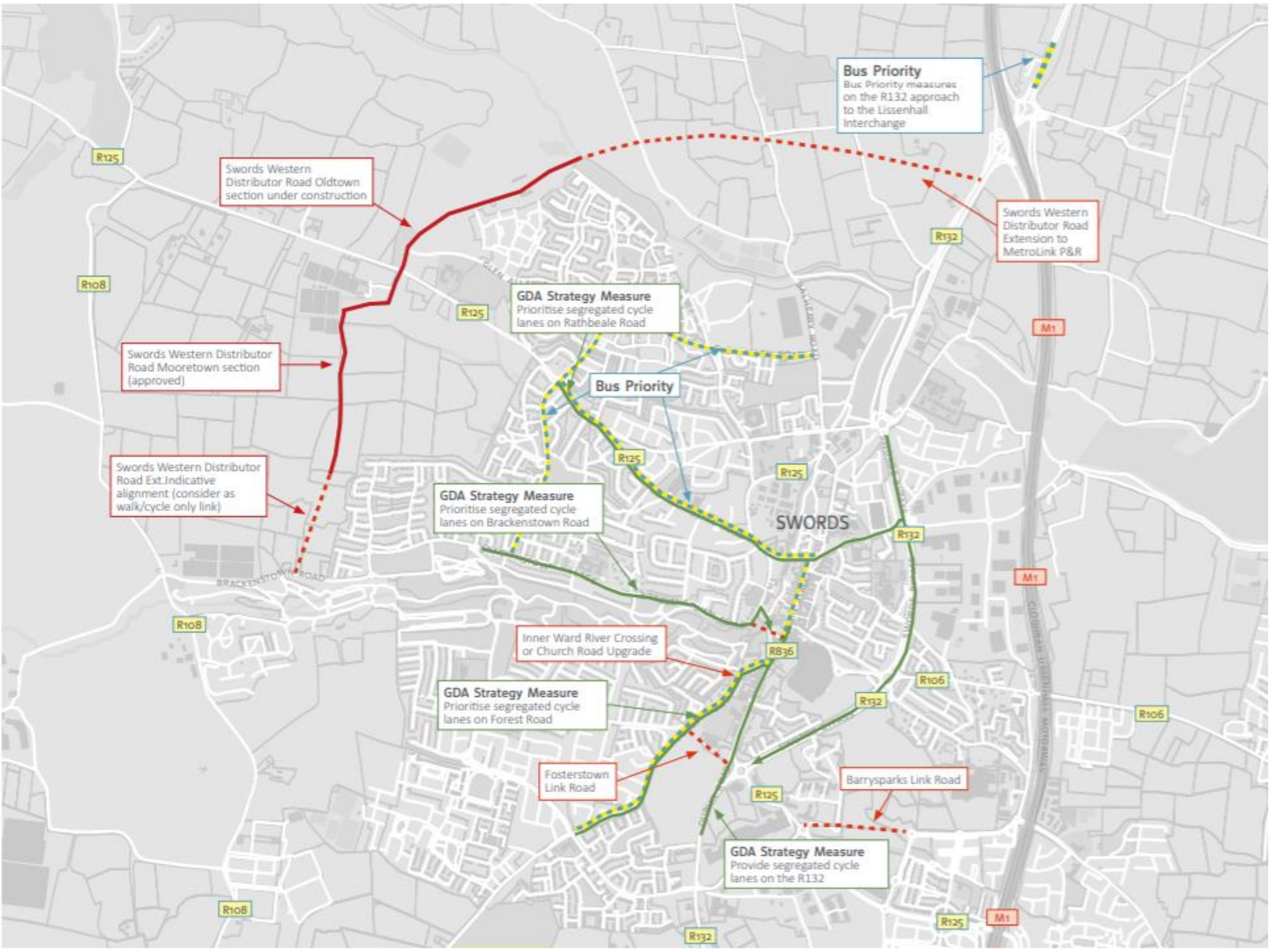


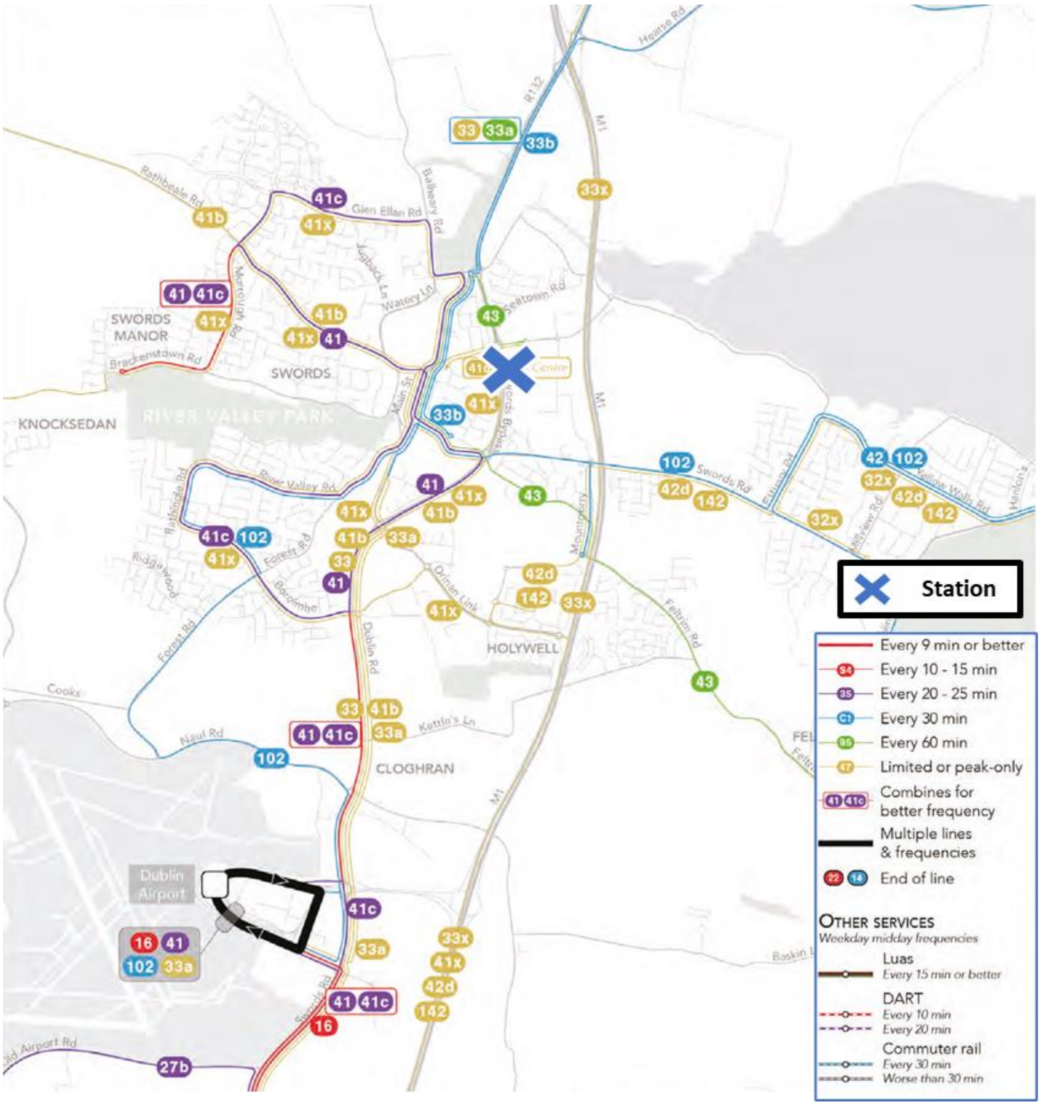
Figure 2.1: Swords Short Term Recommendations Map (source: South Fingal Transport Study)

3. Baseline Conditions

This section describes the existing receiving environment within the vicinity of the Seatown Station and the wider environs, and identifies the future receiving environment for all modes of transport if conditions are planned to change in advance of the construction of the Project, such as the delivery of other proposed infrastructure projects.

3.1 Existing Public Transport Network

As shown in Figure 3.1, the area surrounding Seatown Station is served by several bus services with limited frequencies or peak-only services. The most frequent service runs every 20-25 mins south of the station. Within a 600m buffer from the station there are 5 bus stops located along the R132 and Seatown Road, as shown in Figure 3.2. The nearest bus stop is on Seatown Road serving routes 41d (towards Lower Abbey Street) and 43 (towards Talbot Street).



(Base Source: www.busconnects.ie)

Figure 3.1: Existing bus network around Seatown Station

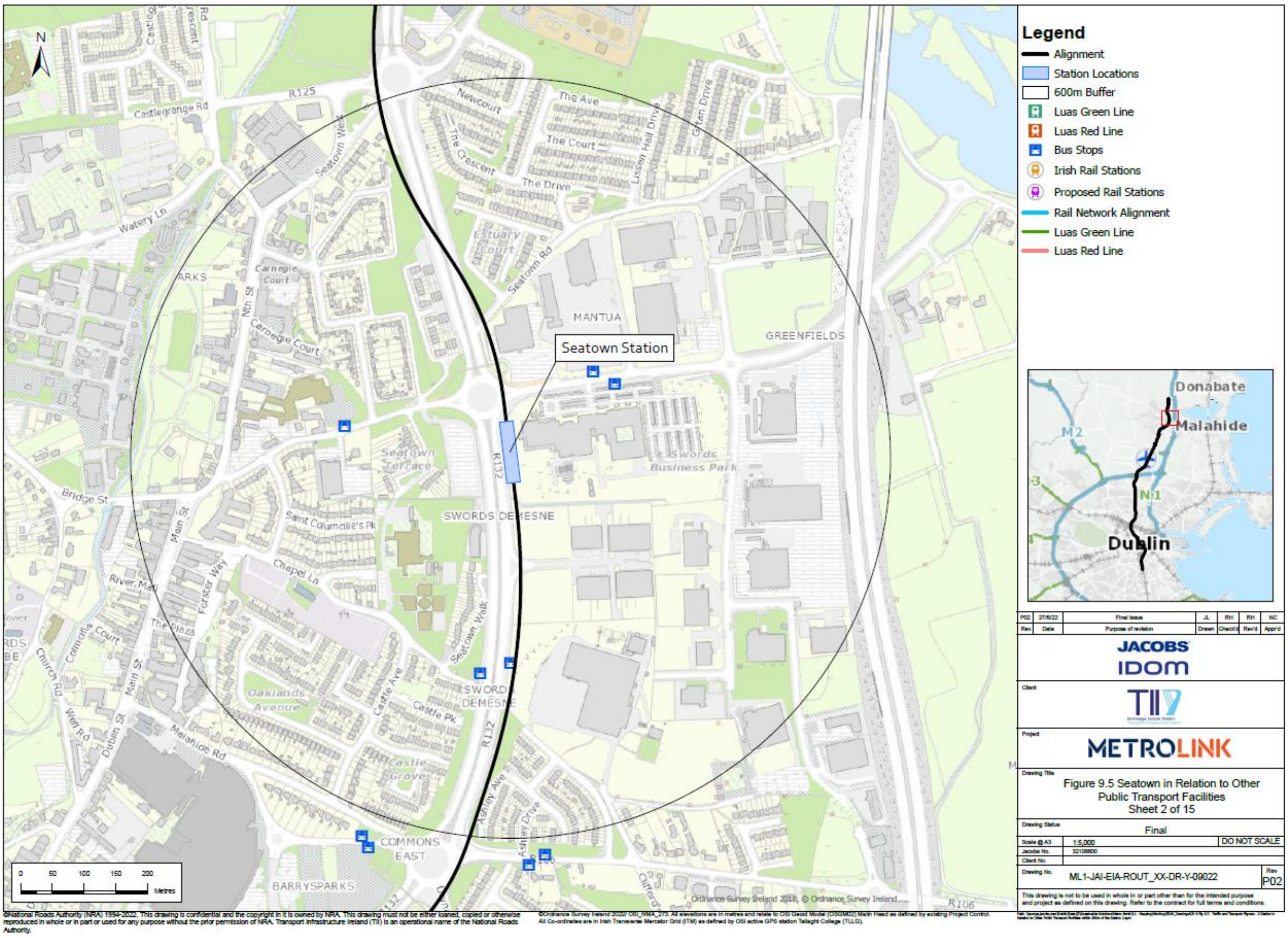


Figure 3.2: Seatown Station in Relation to Other Public Transport Provisions Within 600m of the Station

Services 500x (Swords Express) and 503 (towards Merrion Square South) serve the station directly from the R132, as shown in Figure 3.3.

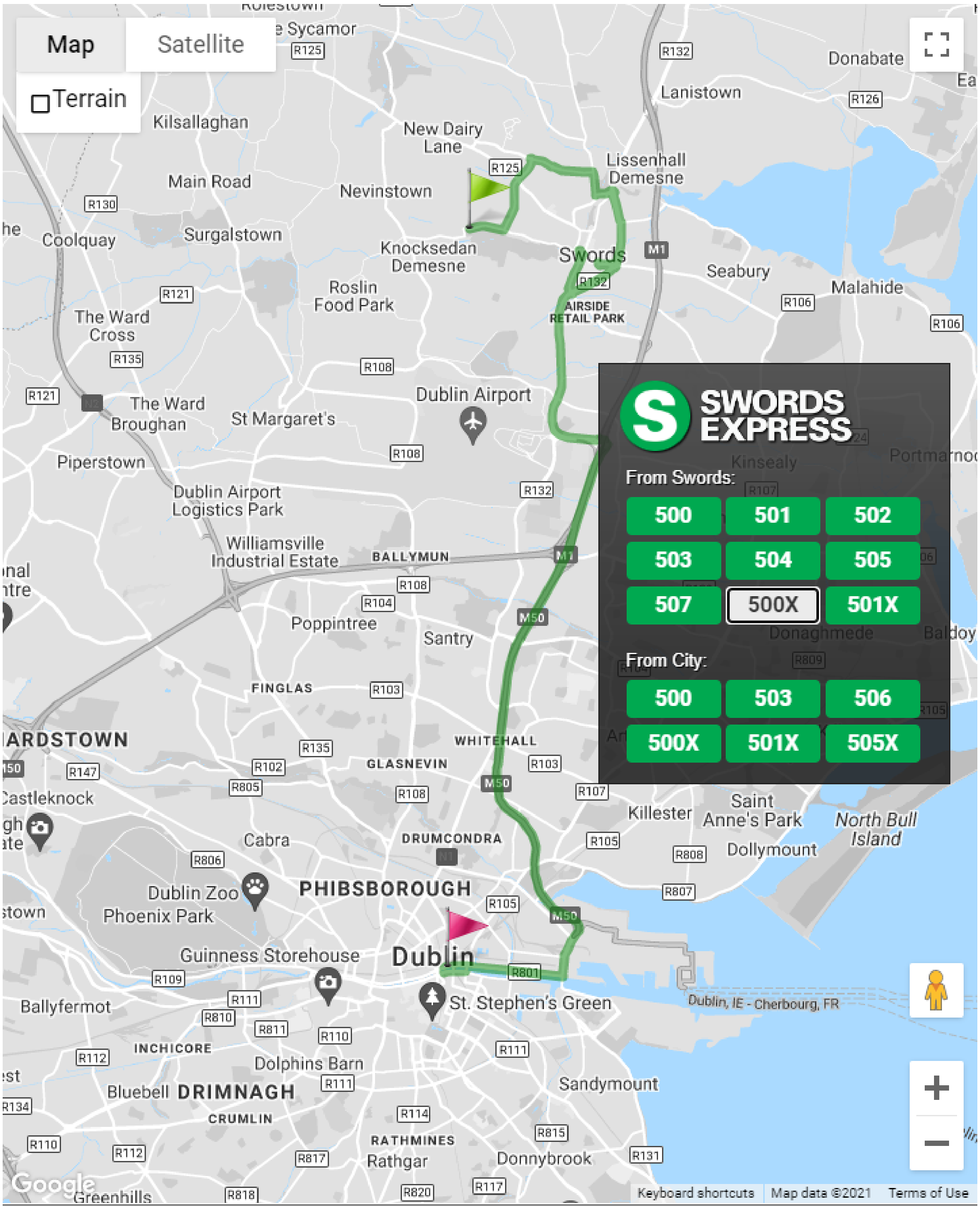


Figure 3.3: Swords Express Routes (www.swordsexpress.com)

3.2 Future Receiving Environment- Public Transport Network

As part of the Bus Network Redesign proposals, no routes will serve the R132 at Seatown Station, however Other City Bound route 21 will serve Mantua, east of Seatown Road Roundabout. North Street to the west of the station will be served by Other City Bound route 22, Local routes L83 and L85, and peak-only route X79.

(Base Source: www.busconnects.ie)

Figure 3.4: Bus Network Redesign Proposals around Seatown Station

3.3 Existing Road Network

The road network in the vicinity of Seatown Station comprises of the R132 to the immediate west, Seatown Road to the north and the R106 to the south. The M1 can be accessed via the R132 and Lissenhall Junction, located approximately 1.5km to the north of the station. The Lissenhall Junction is accessed via Lissenhall Road, north of Seatown Station, as shown in Figure 3.5.

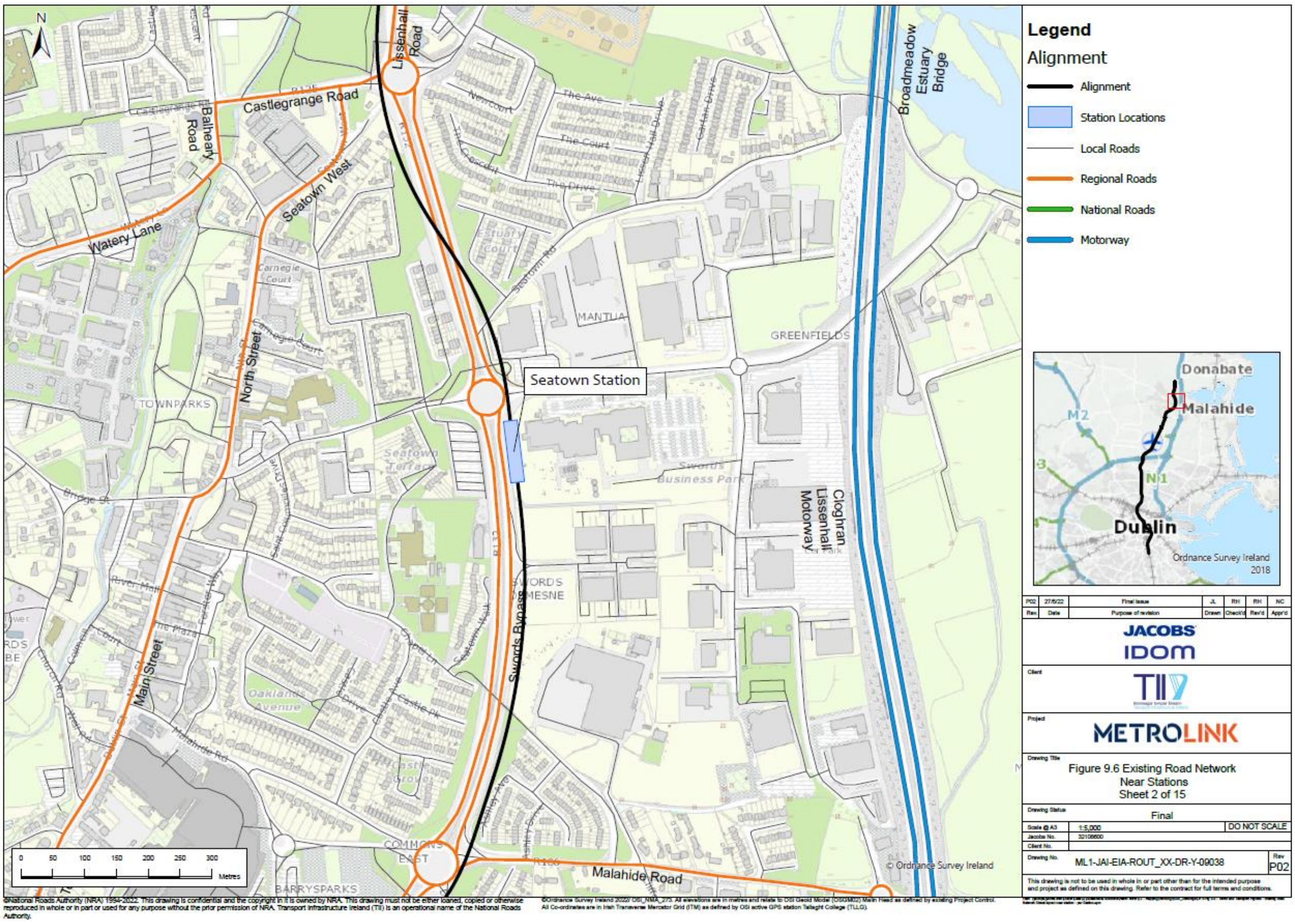


Figure 3.5: Street layout near Seatown Station

The R132 is a two-way single carriageway (dual carriageway in sections, particularly in the vicinity of the station through Swords), of approximately 25m in width. The R132 is a regional road that travels between Dundalk in the north and joins the R104 in the vicinity of the Dublin Port Tunnel.

Seatown Road, located to the north of the proposed station, travels between the Seatown Road / Estuary Road Roundabout to the northeast of the station and the R836 approximately 400m to the west of the Seatown Road Roundabout, which in turn joins the R125 heading west towards the M2 and M3. Seatown Road (west of R132) is a two-way single carriageway of approximately 5.5m in width, and includes traffic calming infrastructure including raised tables, and a signalised pedestrian crossing at Fingal Community College. To the east of the R132, Seatown Road is a two-way single carriageway approximately 9m in width.

The R106, located to the south of the proposed station, travels between the R836 to the southwest of the station and joins the R105 to the southeast at Sutton. In the vicinity of the station, the R106 is a two-way single carriageway of approximately 6m in width.

3.3.1 Junction Turning Count Locations

The Data Collection Report (ML1-JAI-TRA-ROUT_XX-RP-Y-00023) details the methodology and specification of traffic surveys undertaken for the Project. The survey locations relevant to Seatown Station are shown in Table 3.1. Vehicle classifications used for the survey were Car, LGV, OGV1, OGV2, PSV, Motorcycle and Pedal Cycle. PCU values were also reported using appropriate conversion factors for each vehicle classification. The resulting PCU values from the survey results have been used for the LinSig modelling.

Demand flows were obtained from the turning counts and queue data from either observation from online traffic flow data sources or queue count surveys. Demand data has been used in all the assessment work undertaken.

Table 3.1: Survey Locations Around Seatown Station

Junction	Type of Survey
Estuary Roundabout (R132 / R125)	Classified Junction Turning Counts (CJTC)
Seatown Rd Roundabout (R132 / R125)	CJTC
Malahide Road Roundabout (R132 / R106)	CJTC

3.3.2 Base Traffic Flows

The 2018 base traffic flows for the AM and PM peak periods, for the junctions detailed in Table 3.1, are provided within Appendix A Traffic Flow Diagrams.

3.3.3 Forecast Traffic Growth

Forecast traffic growth rates have been obtained from the Eastern Regional Model (ERM) for future years 2035, 2050 and 2065, for the appropriate scenario.

3.4 Future Receiving Environment – Road Network

The Donabate Distributor Road opened as of March 2020, running in an easterly direction from the R126 Hearse Road on the south-west of Donabate village, across the Dublin-Belfast railway line, before heading in a northerly direction to reconnect with the R126 on the Portrane Road. The new 4km road will alleviate traffic at Donabate village and provide alternative access to Portrane and the eastern parts of Donabate. Footpaths and off-road cycle facilities are also included along the extents of the road.

The Swords Western Relief Road (SWRR) is an objective of the Fingal Development Plan 2017-2023, which is proposed to connect the R132 north of the M1 Lissenhall junction and proceeds for approximately 9km through rural Fingal to the N2 north of the M50. The SWRR 'could remove significant volumes of traffic from the Swords Town Centre area, as well as serving strategic traffic between the M1 and M2/M50 corridors.' It could also 'serve the proposed strategic Park and Ride, minimising the amount of traffic utilising limited carrying capacity on the existing and proposed local road network in Swords.'

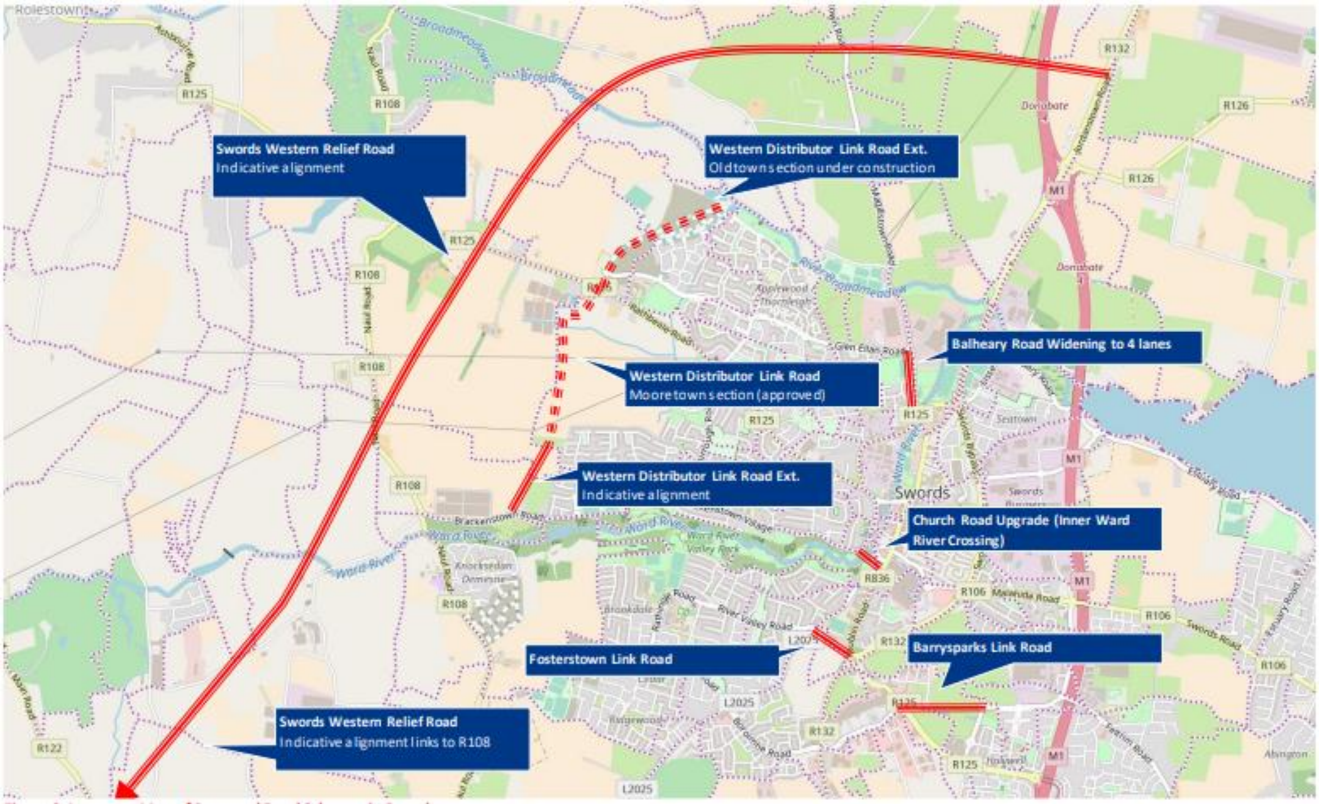


Figure 3.6: Indicative Alignment of Swords Western Relief Road (South Fingal Transport Study – Swords Sub Report)

Fingal County Council, in conjunction with the National Transport Authority, seeks to improve connectivity for pedestrians and cyclists along the R132 by implementing signalised junctions at the current Malahide Road Roundabout, Seatown Road Roundabout and Estuary Roundabout, this scheme is referred to as the R132 Connectivity Project.

3.5 Existing Pedestrian Network

3.5.1 Pedestrian Link Counts

The Data Collection Report (ML1-JAI-TRA-ROUT_XX-RP-Y-00023) details the locations around Seatown Station where pedestrian surveys were undertaken.

3.5.2 Baseline Pedestrian Accessibility Review

A baseline accessibility assessment has been undertaken to establish existing walking provision relevant to the proposed Seatown Station. Catchment maps prepared for the accessibility analysis for walking are based on two criteria, the average speed for each mode and the existing road network. Therefore, maps do not reflect existing access restrictions for private roads and motorised roads.

As the AZ1 Northern Section lies within FCC bounds, the footway provisions have not been assessed against the DCC pedestrian comfort guidance, however the assessment against the TfL Pedestrian Comfort Calculator has been undertaken. At Seatown Station, all links are deemed ‘Comfortable’ for the minimal volumes of existing pedestrian demand, with the exception of the footways on the R132 which are deemed ‘Uncomfortable’ due to their restricted width of 1.3m.

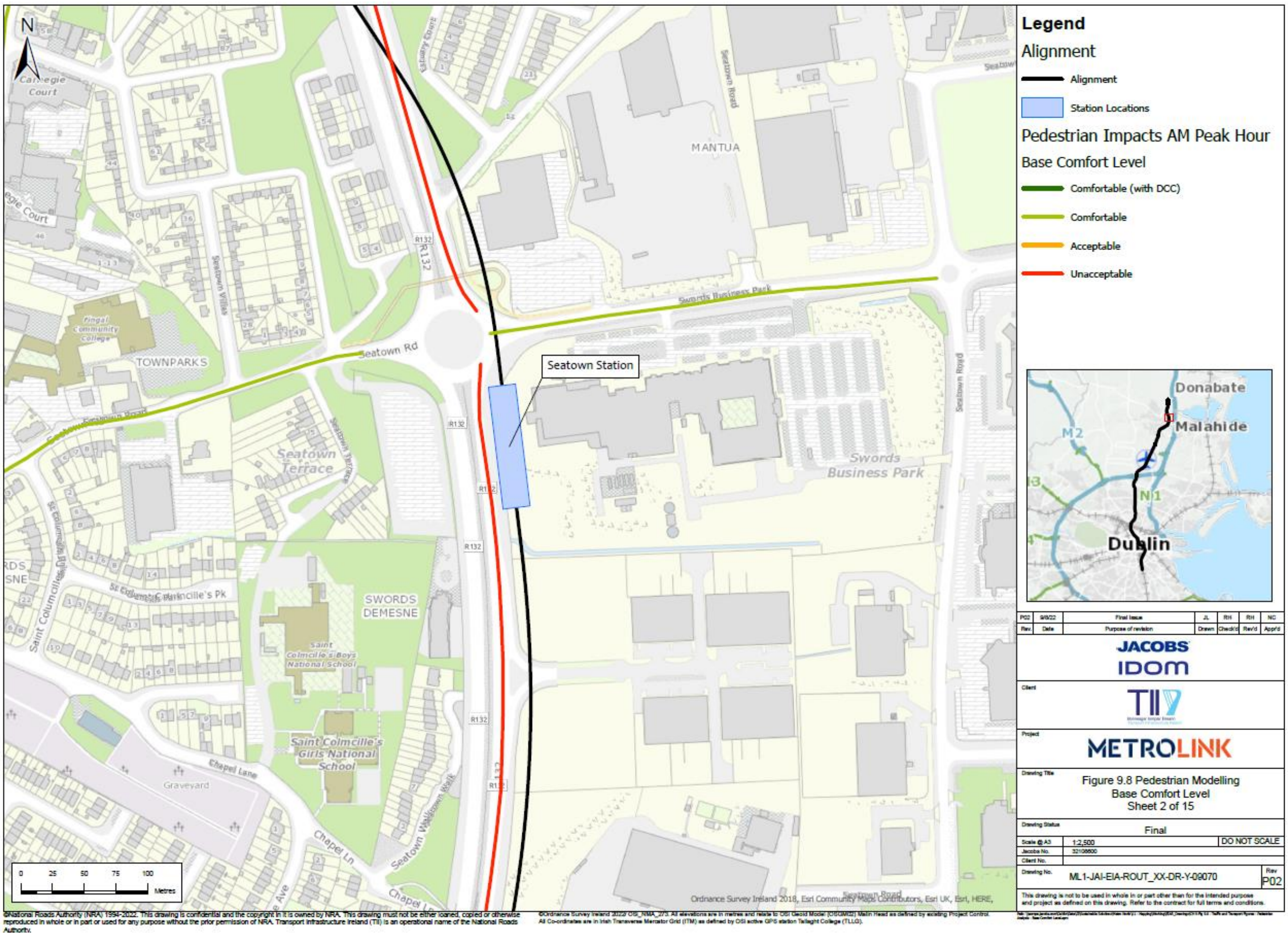


Figure 3.7: Baseline Pedestrian Comfort Assessment at Seatown Station

Figure 3.8 illustrates a 5-minute walking, 10-minute walking and 15-minute walking catchment from the Seatown Station. The figure also shows the location of bus stops within the walking catchments from the station.

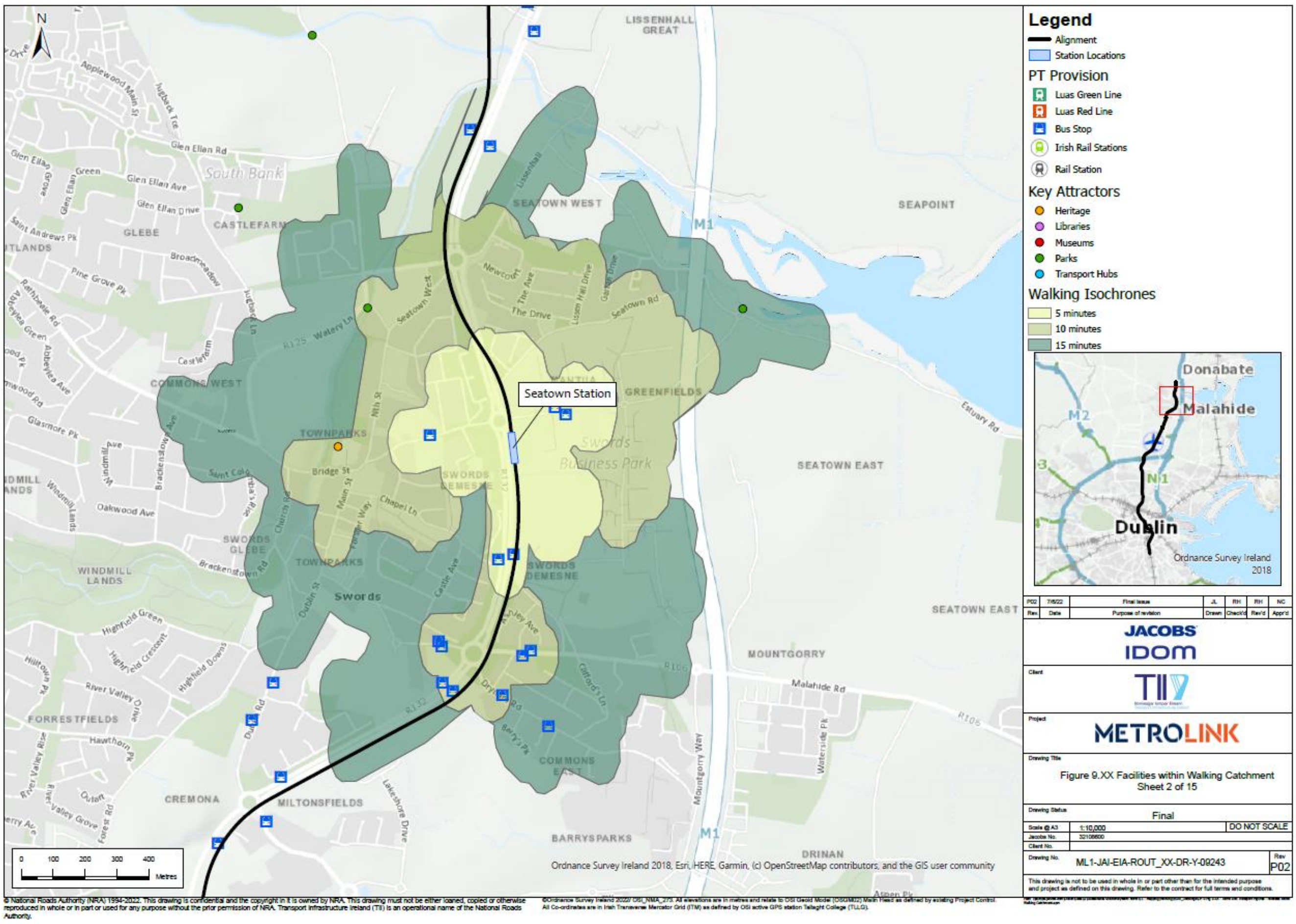


Figure 3.8: Seatown Station Walking Catchment Area

Table 3.2 below details the local facilities and amenities within the walking catchment areas.

Table 3.2: Local facilities and amenities within walking catchment area

Facilities within 5min walking	Facilities within 10min walking	Facilities within 15min walking
North Dublin Corporate Park	Swords Business Park	St. Colmcille's GAA Club
Woodies Seatown	Seatown Park	St Finian's Community College
St. Colmcille's Catholic BNS	Fingal County Council	Swords Montessori School & Creche
Kids Inc Creche, Montessori & After School	Swords Castle	The Pavillions Shopping Centre
Seatown Road bus stop	St. Colmcille's Girls National Catholic School	Swords Main Street
Aldi	St. Colmcille's Catholic Church	Swords Round Tower
Fingal County Council Car Park	Fingallians GAA Club	
Fingal Community College		

3.6 Future Receiving Environment – Pedestrian Network

Accessibility in the Ward River area will be improved in the future with the development of the Swords Western Distributor Road (SWDR), which will form a spine of access to both Oldtown and Mooretown. The SWDR will 'comprise a safe and attractive pedestrian/cyclist green corridor to facilitate access to the Ward River Valley Park, thereby ensuring connectivity to the wider green network of open spaces' (South Fingal Transport Study- Swords Sub Report, 2019, p17).

With the implementation of the R132 Connectivity Project, there will be improved pedestrian connections across the R132 through the realignment of the existing roundabouts to signalised junctions, including the provision of pedestrian crossings.

3.7 Existing Cycle Network

Figure 3.9 illustrates Seatown Station within the GDA Cycle Network. Seatown Road to the west of the proposed station is designated as a Secondary Route within the GDA Cycle Network. There are limited cycle facilities in this section, however bus lanes are present on the R132 Swords Bypass offering a shared use provision with up to a Level B Quality of Service. The provisions in this section range in significance and sensitivity (from low to high) due to the proximity to Swords Town Centre and a number of industrial estates.

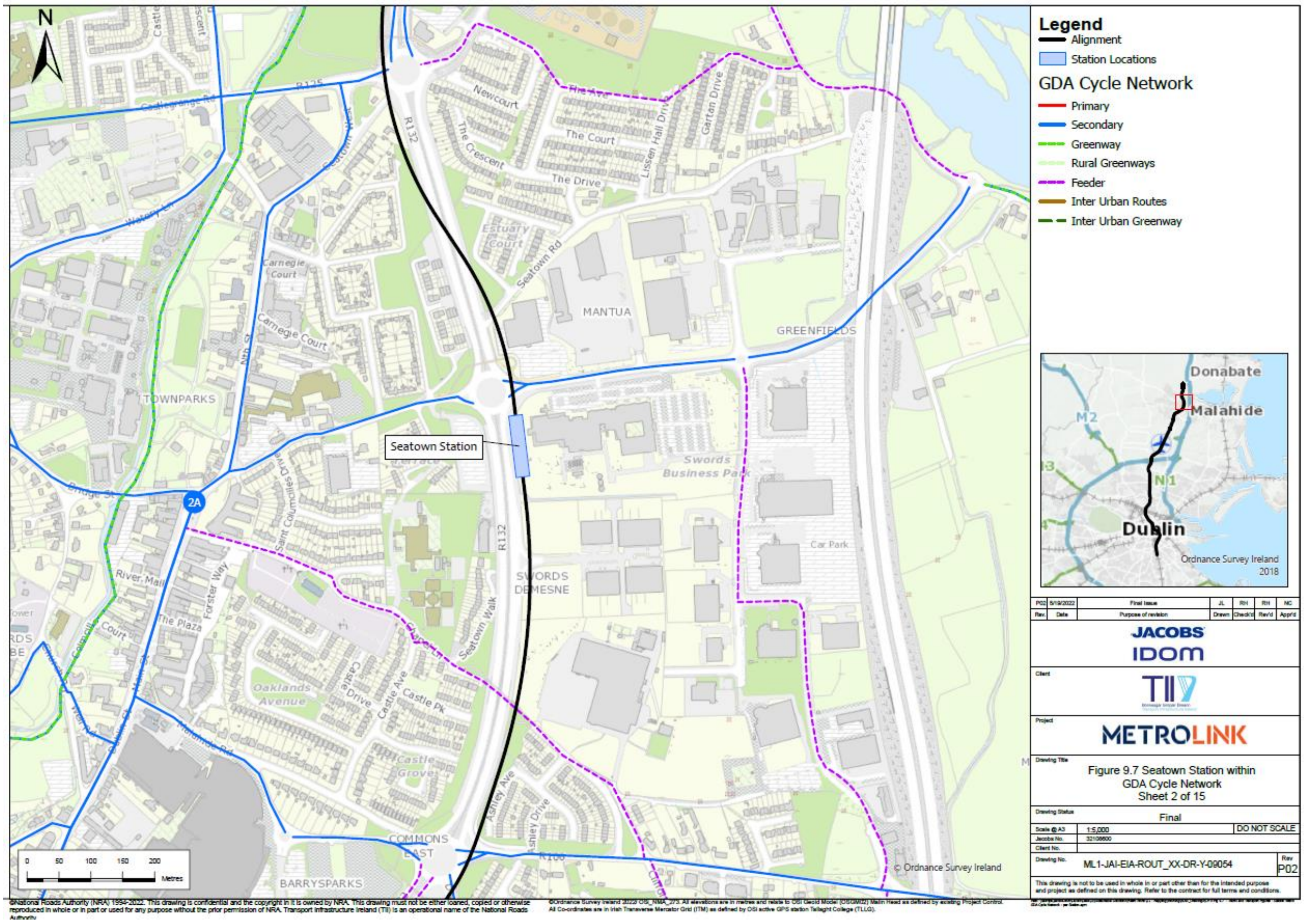


Figure 3.9: Proposed Station Location within the Proposed GDA Cycle Network for Towns

3.7.1 Baseline Cycle Accessibility Review

A baseline accessibility assessment has been undertaken to establish existing cycling provision relevant to the proposed Seatown Station. Catchment maps prepared for the accessibility analysis for cycling are based on two criteria, the average speed for each mode and the existing road network. Therefore, maps do not reflect existing access restrictions for private roads and motorised roads.

Figure 3.10 illustrates a 5-minute cycling and 10-minute cycling catchment from the Seatown Station, and the location of existing bike racks and Dublin Bike stations in close proximity to the station. The figure shows that the majority of Swords is located within a 10-minute cycle of the station, with Seatown East and Mountgorry to the east located within a reasonable cycle distance of the station also.

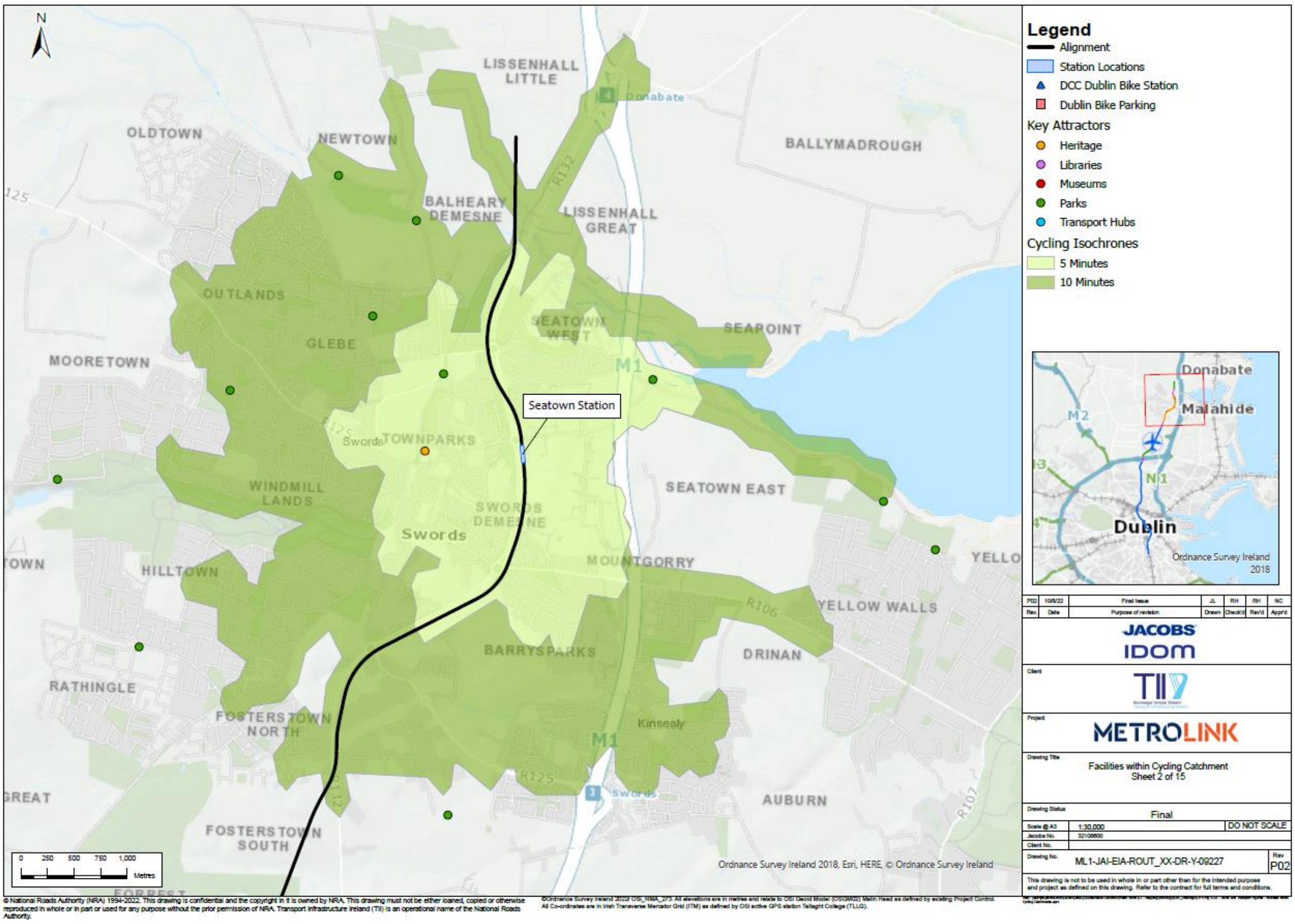


Figure 3.10: Seatown Station Cycling Catchment area

Table 3.3 below details the local facilities and amenities within the cycling catchments around Seatown Station.

Table 3.3: Local facilities and amenities within cycling catchment area

Facilities within 5min cycling	Facilities within 10min cycling
Swords Business Park	Airside Retail Park
Seatown Park	Airside Business Park
Fingal County Council	Pinnockhill
Swords Castle	Holywell Commercial Centre
St. Colmcille's Girls National Catholic School	St. Cronan's Junior National Catholic School
St. Colmcille's Catholic Church	St. Cronan's Catholic Church
Fingallians GAA Club	Holy Family Junior National School
	St. Finian's Catholic Church

3.8 Future Receiving Environment- Cycle Network

As part of the R132 Connectivity Project, the change of the existing roundabouts to signalised junctions will provide for designated cycle lanes and cycle crossings, improving connectivity across the R132.

4. The Proposed Project – Seatown Station

4.1 Site Location and Development Context

The proposed Seatown Station, as shown in Figure 4.1, is located to the immediate south of Seatown Road Roundabout. Seatown Station is the second most northerly station on the Project corridor and is located in close proximity to Swords Business Park and North Dublin Corporate Park. Seatown Park residential area is located to the northeast of the station, while the station will also serve a variety of land uses in the northern portion of Swords.

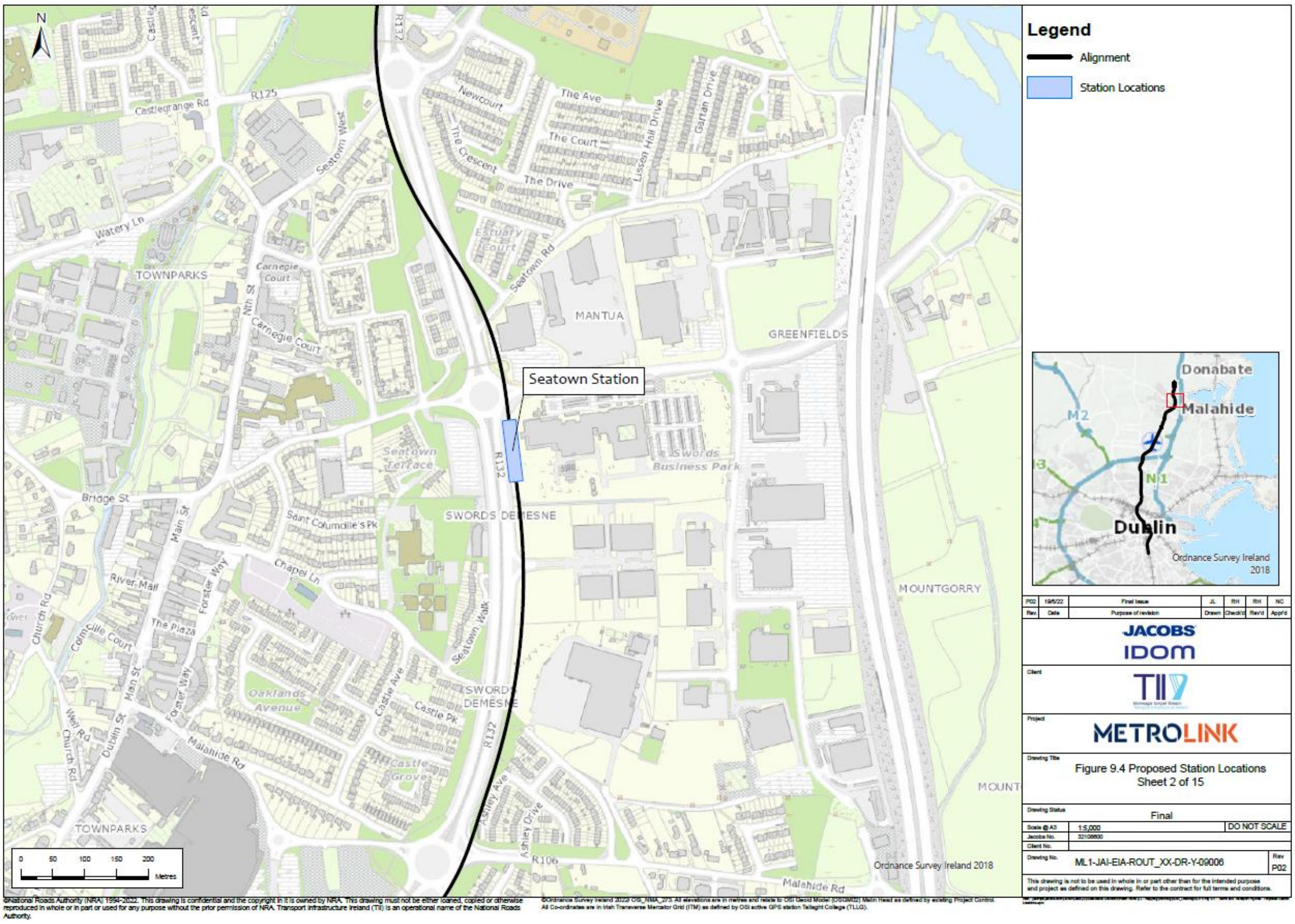


Figure 4.1: Proposed Seatown Station Location

Figure 4.2 illustrates the proposed layout for Seatown Station at street level. The figure shows the location of entrances and exits, improvements to the public realm and bike parking area. There is no vehicular parking provision proposed at Seatown Station. The R132 Connectivity Project will upgrade the Seatown Roundabout to a signalised junction, with designated pedestrian and cyclist crossings for safe access to and from Seatown Station.

In order to facilitate the movement of passengers from the surrounding catchment, 480 bicycle parking spaces will be provided at Seatown Station, approximately 360 of these bicycle parking spaces will be inside of the building and the remaining Sheffield stands will be outside of the building. A segregated cycleway is proposed on both sides of Seatown Road, to the east and west of Seatown Roundabout, which will facilitate safe access to the proposed cycle parking.

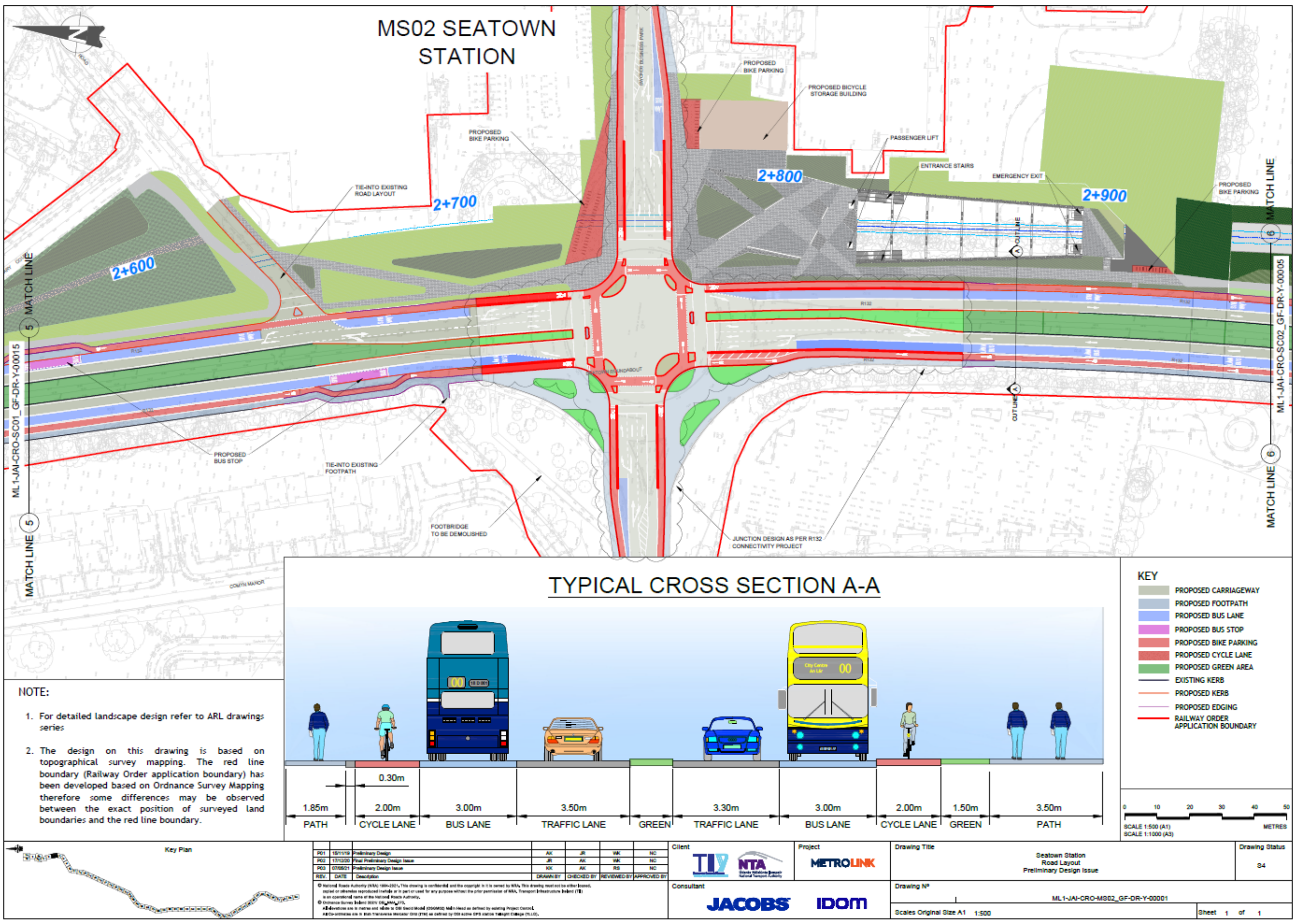


Figure 4.2: Seatown Station Plan with R132 Connectivity (ML1-JAI-CRO-MS02_GF-DR-Y-00001)

5. Trip Generation / Trip Attraction

5.1 Operational Phase

Transport movements associated with the Seatown Station operational phase have been established by utilising the National Transport Authority's (NTA) East Regional Model (ERM). The ERM provides a comprehensive representation of multi-modal travel patterns across the Greater Dublin Area and is a suitable tool for the testing and appraisal of the proposed Project.

5.1.1 Passenger Boarding and Alighting

Passenger demand modelling has been used to predict the numbers of passengers boarding and alighting at each station, and the resulting passenger load on MetroLink vehicles, for the years 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). The scenarios considered for assessment for each of the years 2035, 2050 and 2065 are outlined in Table 5.1.

Table 5.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project
Do Minimum Scenario	Committed transport schemes in the absence of the Project
Do Something - Scenario A	Scenario with the Project and committed transport schemes only
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for Opening year (2035) and planned schemes under the Transport Strategy for the GDA for the Design Year (2050) and the Forecast Year (2065)

5.1.1.1 Boarding and Alighting Volumes

Table 5.2 to Table 5.9 shows boarding, alighting and interchange numbers for the Seatown Station at different peak periods. All data has been retrieved from the ERM (2016) developed by the NTA. Data in this section was obtained for 12-hour period (07:00 – 19:00) and for the busiest hour within each of the following peak periods:

- AM: busiest hour between 07:00 – 10:00
- LT (lunch time): busiest hour between 10:00 – 13:00
- SR (school run): busiest hour between 13:00 – 16:00
- PM: busiest hour between 16:00 – 19:00

Figure 5.1 presents the volume of boarding and alighting passengers at Seatown Station over the 12hr peak period (07:00-19:00) in both Scenario A and Scenario B. Scenario A has the highest volume of both boarding and alighting passengers, reaching approximately 6,800 boarding passengers and 6,500 alighting passengers in 2065, compared to approximately 6,100 boarding passengers and 5,800 alighting passengers in Scenario B 2065.

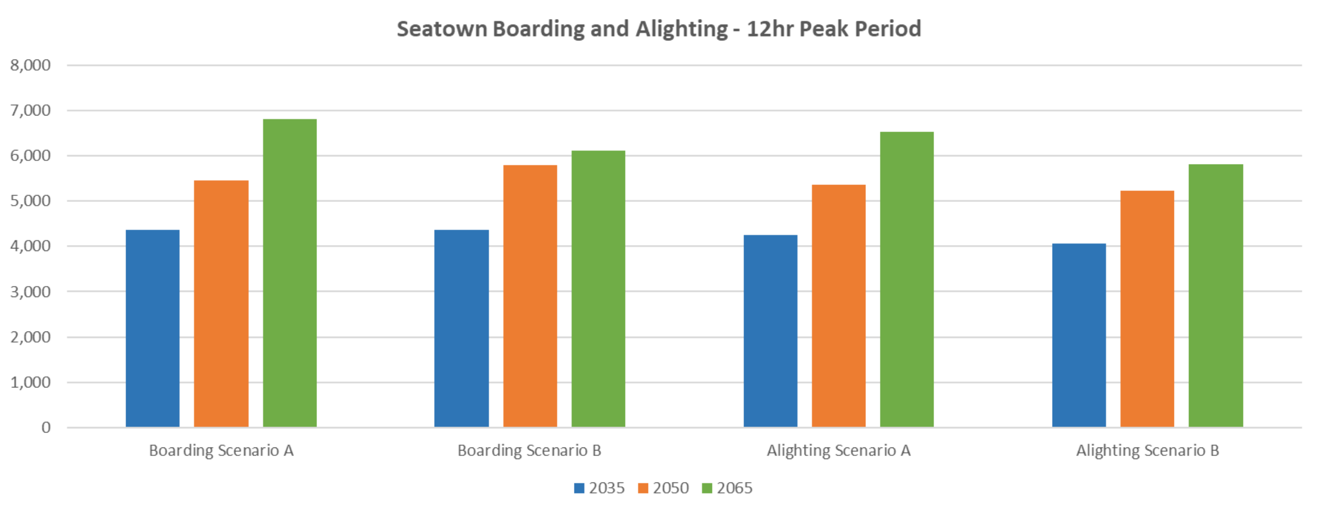


Figure 5.1: Seatown 12hr Boarding and Alighting in Scenario A and Scenario B

5.1.1.2 Boarding and Alighting Volumes: Scenario A

Table 5.2 to Table 5.4 below highlight the boarding and alighting passenger numbers for Seatown Station in Scenario A.

For the Opening Year, 2035, during the AM peak hour 969 passengers are expected to board the MetroLink vehicles at Seatown Station and head south, while there are 378 northbound passengers alighting, and 166 southbound passengers arriving from Estuary. In the PM peak hour 640 passengers are expected to alight the MetroLink vehicles at Seatown Station and head north, while there are 288 southbound passengers expected to board.

Table 5.2: Boarding and Alighting Numbers at Seatown Station in 2035 Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	4	378	151	13	197	407	37	240	781	185	640	2,006
Southbound	969	166	3,236	170	10	593	159	42	654	288	47	844

Source: East Regional Model (ERM)

For the year 2050, during the AM peak hour, 1,219 passengers are expected to board the MetroLink vehicles and head south, with 474 northbound passengers alighting. During the PM peak hour, 346 passengers will board the MetroLink vehicles and head south, with 797 northbound passengers alighting.

Table 5.3: Boarding and Alighting Numbers at Seatown Station in 2050 Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	4	474	165	27	252	650	24	316	631	247	797	2,500
Southbound	1,219	186	3,341	217	43	1,133	202	35	559	346	58	1,060

Source: East Regional Model (ERM)

For the year 2065, during the AM hour, 1,593 passengers will board the MetroLink vehicles and travel south. 585 northbound passengers are expected to alight. During the PM peak hour, 430 passengers are expected to board and travel south, while 1,002 northbound passengers will alight.

Table 5.4: Boarding and Alighting Numbers at Seatown Station in 2065 Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	6	585	194	11	321	351	7	402	473	275	1,002	3,028
Southbound	1,593	197	3,737	274	6	605	272	42	781	430	76	1,488

Source: East Regional Model (ERM)

5.1.1.3 Boarding and Alighting Volumes: Scenario B

Table 5.5 to Table 5.7 below highlight the boarding and alighting passenger numbers for Seatown Station in Scenario B.

For the year 2035, during the AM peak hour, 1,037 passengers are expected to board the MetroLink vehicles and head south, with 392 northbound passengers alighting. During the PM peak hour, 300 passengers are expected to board the MetroLink vehicles and head south while 616 northbound passengers will alight.

Table 5.5: Boarding and Alighting Numbers at Seatown Station in 2035 Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	3	392	106	17	196	450	55	239	1,004	99	616	1,031
Southbound	1,037	118	2,587	162	28	808	163	28	605	300	23	590

Source: East Regional Model (ERM)

For the year 2050, during the AM peak hour, 1,362 southbound passengers are expected to board the MetroLink vehicles at Seatown Station and 496 northbound passengers are expected to alight. During the PM peak hour, 376 southbound passengers are expected to board the MetroLink vehicles, while 789 northbound passengers will alight.

Table 5.6: Boarding and Alighting Numbers at Seatown Station in 2050 Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	2	496	89	19	252	470	13	315	379	204	789	2,502
Southbound	1,362	83	3,082	233	52	1,227	226	44	651	376	60	1,164

Source: East Regional Model (ERM)

For the year 2065, during the AM peak hour, 1,601 southbound passengers are expected to board the MetroLink vehicles at Seatown Station while 550 northbound passengers are expected to alight. During the PM peak hour, 403 southbound passengers are expected to board while 994 northbound passengers will alight.

Table 5.7: Boarding and Alighting Numbers at Seatown Station in 2065 Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	3	550	143	18	309	584	32	391	956	14	994	717
Southbound	1,601	58	3,863	262	17	900	257	4	480	403	2	532

Source: East Regional Model (ERM)

5.1.1.4 Public Transport Interchange Volumes

As part of the Bus Network Redesign proposals, the closest bus service will be Other City Bound route 21, serving Mantua, east of Seatown Road Roundabout. North Street to the west of the station will be served by Other City Bound routes, Local routes, and peak-only route, as described in Section 3.2.

Table 5.8 and Table 5.9 present the volume of passengers transferring to and from MetroLink vehicles with other public transport modes in Scenario A and Scenario B AM and PM peak hours. The majority of passengers will originate from, or have final destinations in, the surrounding zones, with limited interchange with the bus network.

Table 5.8: Transfers To/From Other Public Transport Modes in Scenario A

Scenario A									
Year	Peak	Boarding				Alighting			
		First Boarding	From Bus	From Rail/DART	From Luas	Final Stop	To Bus	To Rail/DART	To Luas
2035	AM	875	98	-	-	526	19	-	-
	PM	461	12	-	-	612	75	-	-
2050	AM	1,047	177	-	-	638	22	-	-
	PM	579	14	-	-	768	86	-	-
2065	AM	1,317	282	-	-	757	25	-	-
	PM	689	16	-	-	984	94	-	-

Source: East Regional Model (ERM)

Table 5.9: Transfers to/from Other Public Transport Modes in Scenario B

Scenario B									
Year	Peak	Boarding				Alighting			
		First Boarding	From Bus	From Rail/DART	From Luas	Final Stop	To Bus	To Rail/DART	To Luas
2035	AM	754	286	-	-	490	19	-	-
	PM	386	13	-	-	561	79	-	-
2050	AM	952	412	-	-	558	22	-	-
	PM	565	15	-	-	733	116	-	-
2065	AM	1,168	436	-	-	582	26	-	-
	PM	400	17	-	-	842	154	-	-

Source: East Regional Model (ERM)

5.1.1.5 Distribution of Passengers Boarding and Alighting

Figure 5.2 and Figure 5.3 show the origins of passengers arriving to board at the station and the destination of passengers alighting at Seatown Station respectively during the 2050 AM peak hour. The width of the lines is proportional to the number of commuters leaving/arriving at the station. The main origins of passengers are the residential areas to the west of the R132 and the Seatown residential area, the key destinations are the employment areas within Swords town centre and the employment area of Swords Business Park.

Similar patterns are seen in the 2035 and 2065 AM peak periods and the pattern is generally reversed in the PM peak periods.

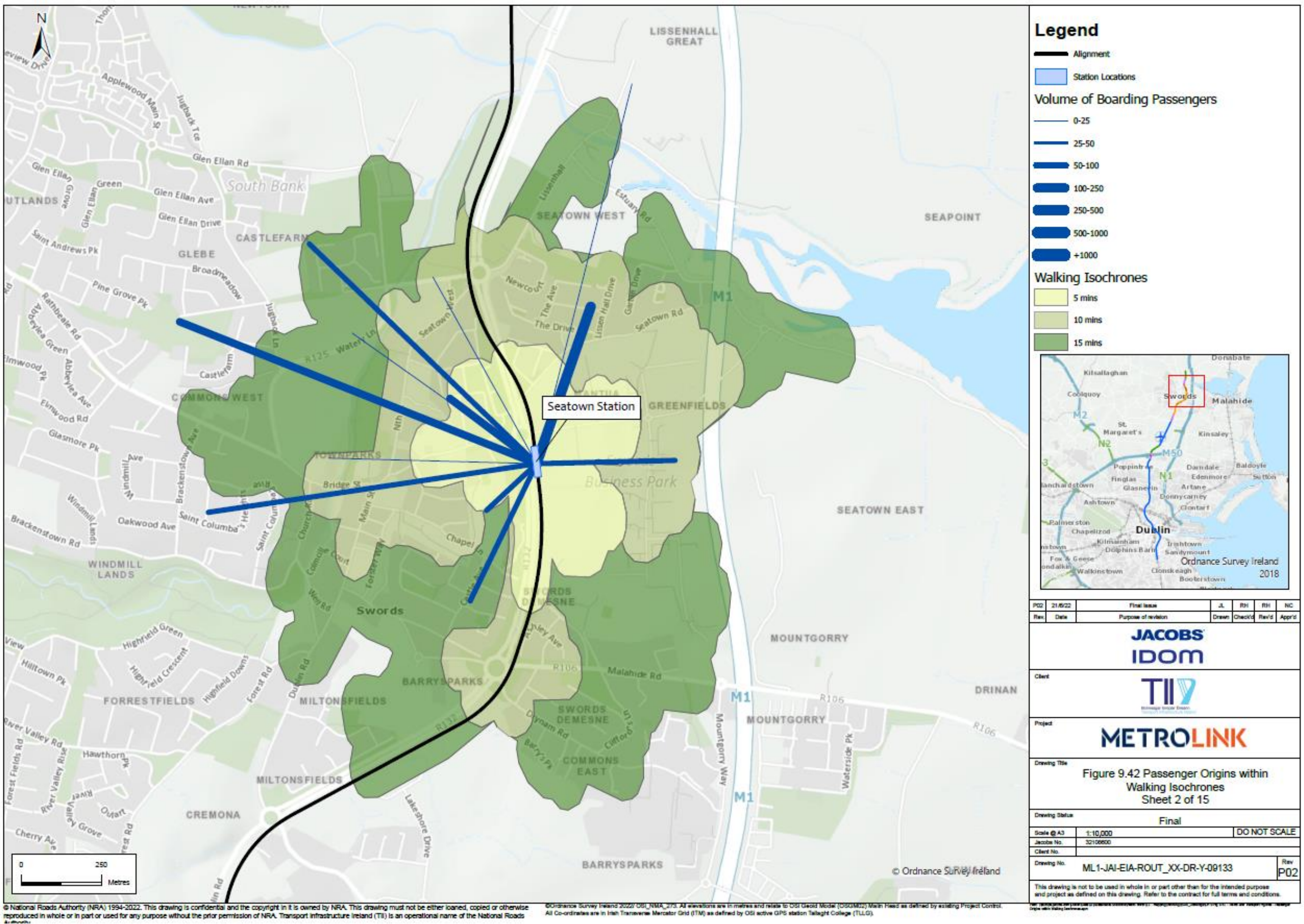


Figure 5.2: Origins (Passengers Boarding) at Seatown During AM peak hour

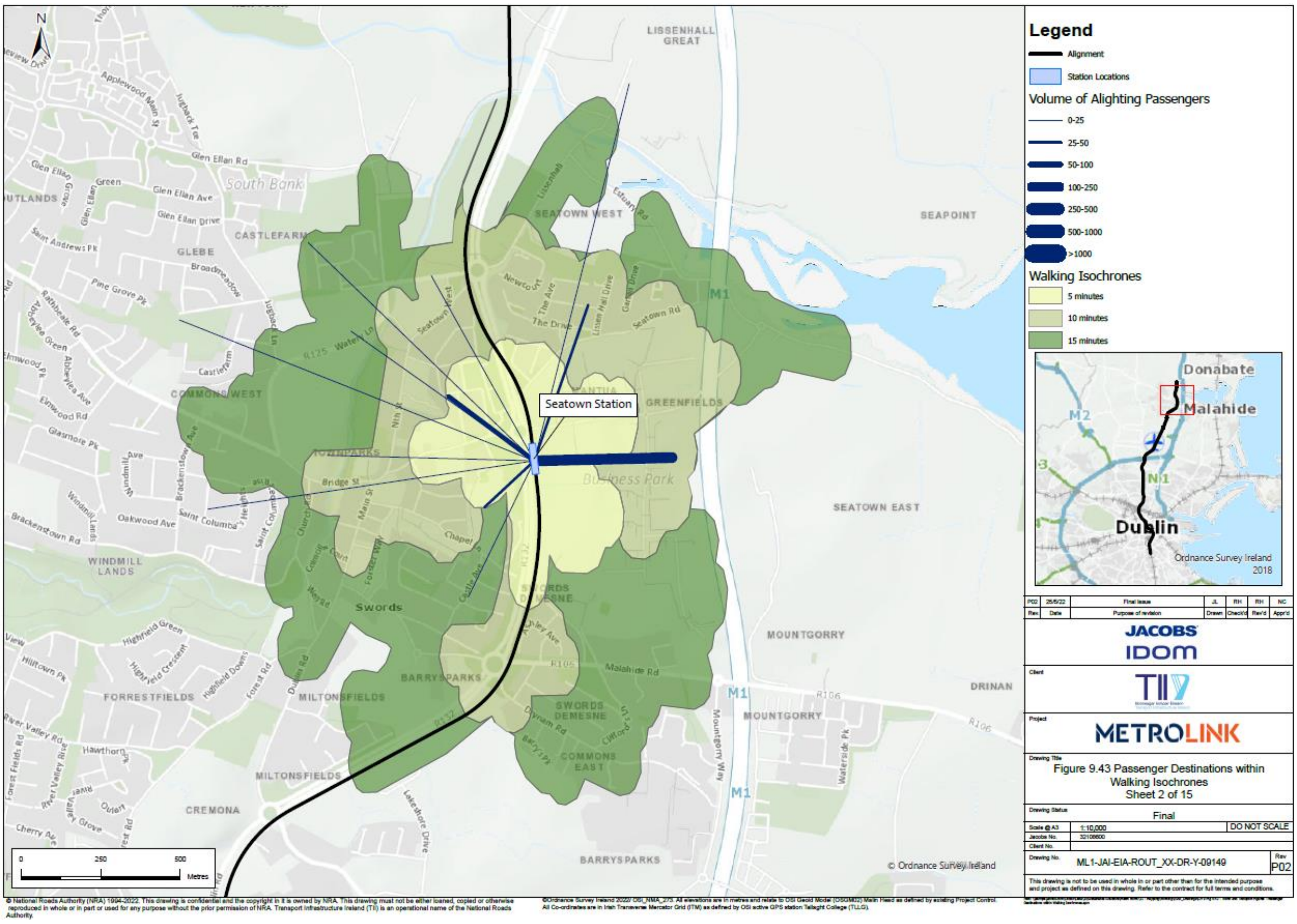


Figure 5.3: Destinations (Passengers Alighting) at Seatown During AM peak hour

6. Assessment of Impacts

6.1 Operational Phase

As part of the assessment of impacts associated with the Operational Phase of the Project, the impact of the proposed Seatown Station will be examined on all modes of transport – public transport (PT), general traffic, walking and cycling.

6.1.1 Public Transport Assessment

As part of the Bus Network Redesign proposals, no routes will serve the R132 at Seatown Station, however Other City Bound route 21 will serve Mantua, east of Seatown Road Roundabout. North Street to the west of the station will be served by Other City Bound route 22, Local routes L83 and L85, and peak only route X79.

The ERM model has been interrogated in order to estimate the reduction in private car trips associated with the origin and destination trips in the zones around the Seatown Station. In Scenario A, there is an 18% increase in total trip demand between 2035 and 2050, with a further 12% increase from 2050 to 2065. Between the Do Minimum and Do Something scenarios, there is a 9 percentage point increase in PT mode share in 2035. In 2050 and 2065, there is an increase of 10 percentage points and 11 percentage points in the PT mode share, respectively.

Private car mode share decreases by 4 percentage points in 2035, from 63% in the Do Minimum to 59% in the Do Something scenarios. In 2050 and 2065, private car mode share decreases by 5 percentage points.

The active modes mode share (which includes walking and cycling), reduces by 5 percentage points across 2035 and 2050, reducing by 6 percentage points in 2065. Whilst end-to-end active mode trips will reduce, there will be an increase in active mode trips to and from the station where passengers will interchange with the Project. Overall, there is a shift towards sustainable travel modes (active modes and PT combined), and a reduction in private car trip demand at Seatown Station.

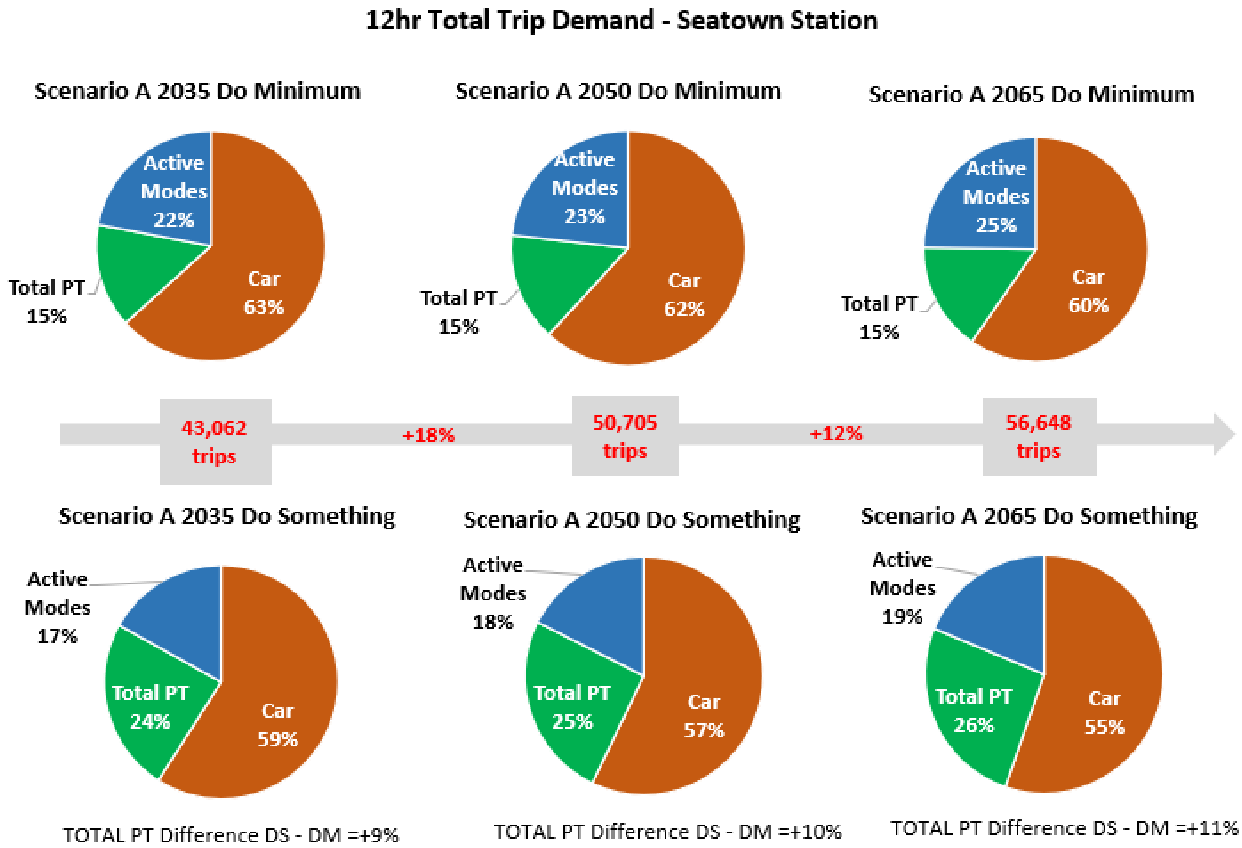


Figure 6.1: Seatown Mode Share – Scenario A

In Scenario B, there is an 18% increase in total trip demand between 2035 and 2050, with a further 8% increase from 2050 to 2065. Between the Do Minimum and Do Something scenarios, there is a 10 percentage point increase in PT mode share in 2035. In 2050, there is an increase of 11 percentage points in the PT mode share and in 2065, there is an increase of 8 percentage points in the PT mode share.

Private car mode share decreases by 5 percentage points in 2035, from 64% in the Do Minimum to 59% in the Do Something scenarios. In 2050, private car mode share decreases by 5 percentage points and in 2065, private car mode share decreases by 3 percentage points.

The active modes mode share (which includes walking and cycling), reduces by 5 percentage points across in 2035, 6 percentage points in 2050 and 5 percentage points in 2065. Whilst end-to-end active mode trips will reduce, there will be an increase in active mode trips to and from the station where passengers will interchange with the Project. Overall, there is a shift towards sustainable travel modes (active modes and PT combined), and a reduction in private car trip demand at Seatown Station.

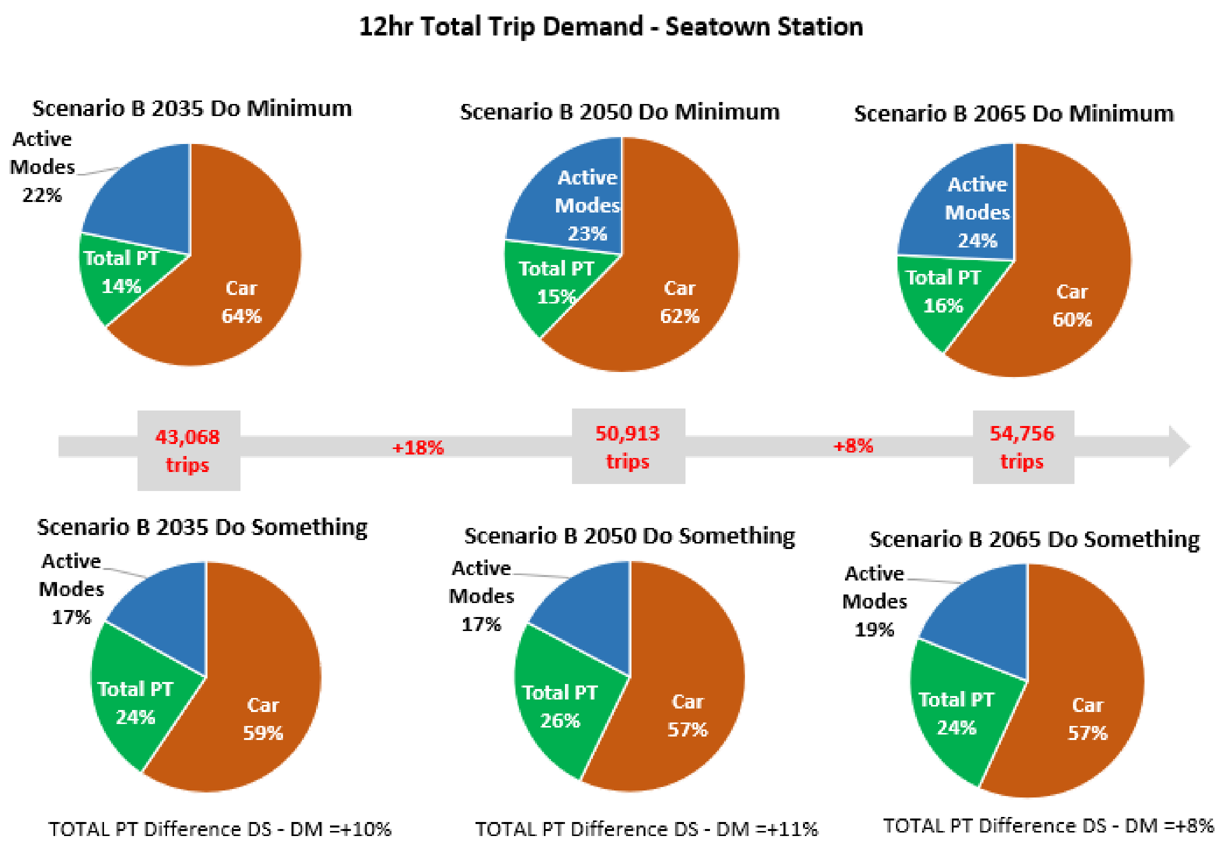


Figure 6.2: Seatown Mode Share – Scenario B

Figure 6.3 presents the changes in PT (including the proposed Project) mode share between the Do Minimum and Do Something scenarios in 2065 Scenario A, with Figure 6.4 presenting the same for Scenario B 2065. In Scenario A, PT (including the proposed Project) mode share sees increases of up to 20 percentage points in the zones to the east of the station, while zones to the west of the station see increases of up to 10 percentage points in 2035 AM period. In the 2050 and 2065 AM periods, these zones see an increase of up to 20 percentage points to the east of the station, with an increased number of zones to the west seeing increase of up to 20 percentage points in PT (including the proposed Project) mode share.

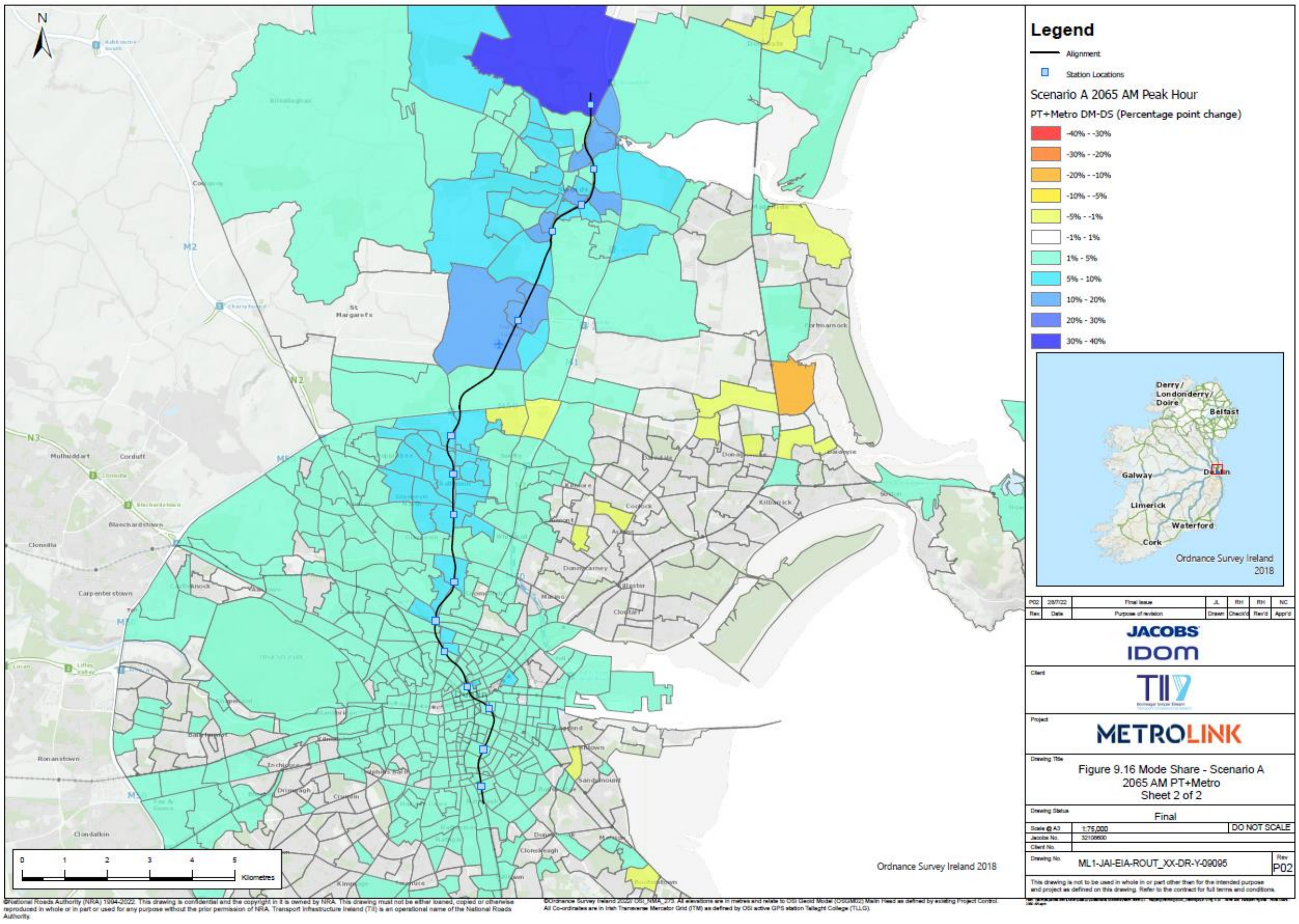


Figure 6.3: Changes in Public Transport Mode Share (including the Project) in Scenario A 2065 AM Peak Hour

In Scenario B, the 2035 AM period PT (including the proposed Project) mode share sees increases of up to 20 percentage points in the zones to the east of the station, while zones to the west of the station see increases of up to 10 percentage points. In the 2050 and 2065 AM periods, these zones see an increase of up to 20 percentage points to the east of the station, with an increased number of zones to the west seeing increase of up to 20 percentage points in PT (including the proposed Project) mode share.

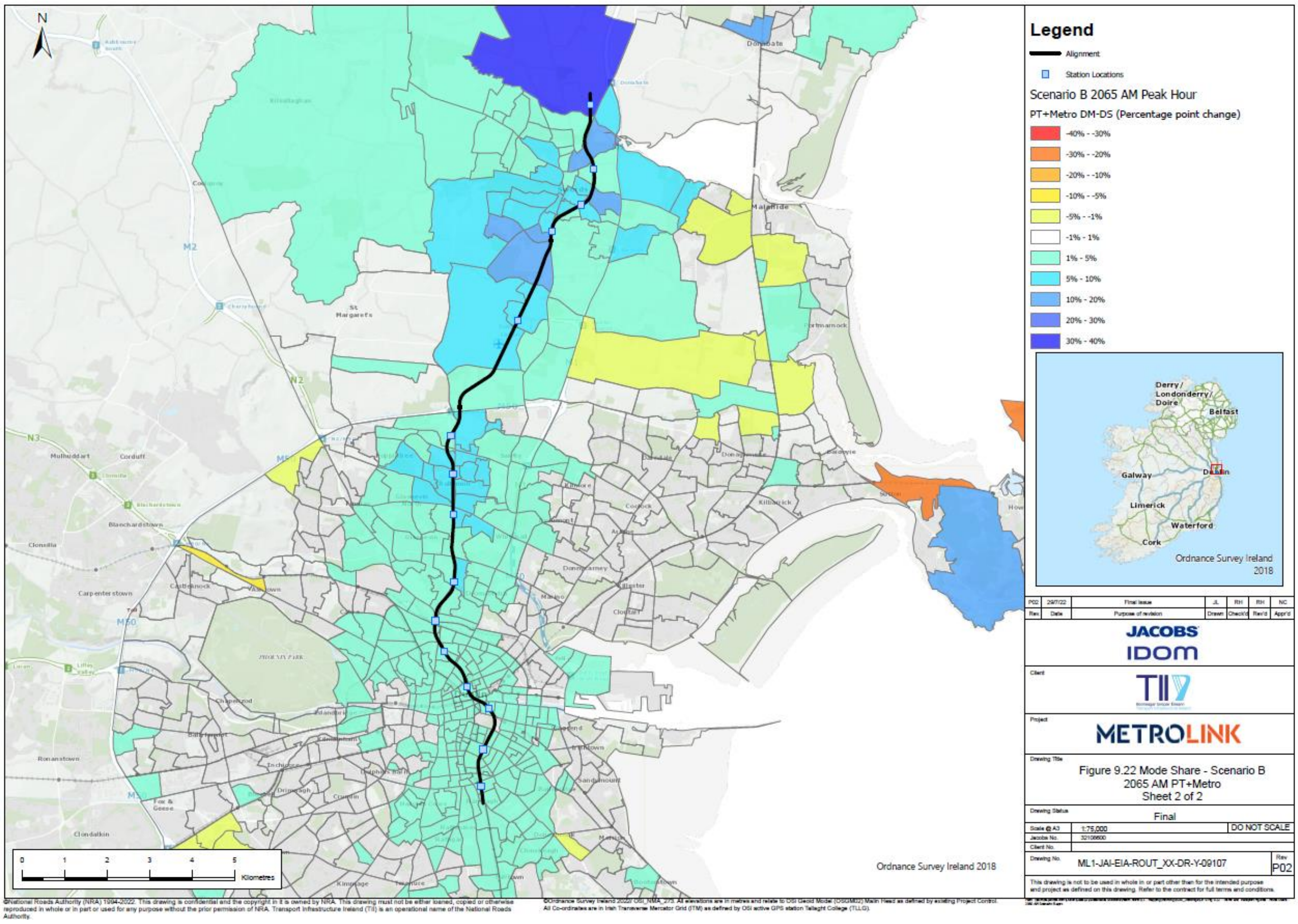


Figure 6.4: Changes in Public Transport Mode Share (Including the Project) in Scenario B 2065 AM Peak Hour

End-to-end public-transport-only journey time comparisons between Do Minimum and Do Something scenarios, including interchange between the Project vehicles and other public transport modes, have been undertaken to investigate benefits to journey time with the proposed Project in place in both Scenario A and Scenario B. The assessments were carried out for zones located across the city as illustrated in Figure 6.5 and Table 6.1. These zones have been identified using local knowledge of population settlements and trip attractors.

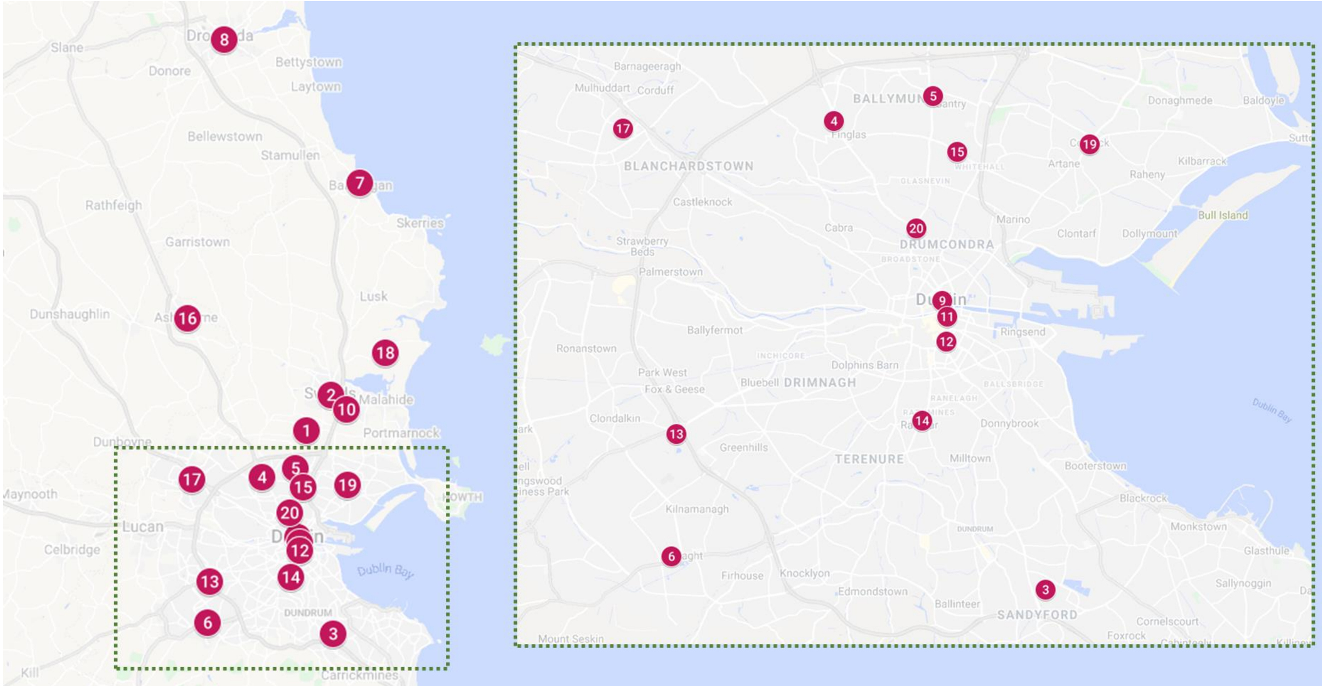


Figure 6.5: Zones assessed for public transport journey time

Table 6.1: Zones assessed for public transport journey time

Nb	Location	Nb	Location	Nb	Location	Nb	Location
1	Dublin Airport	**6**	Tallaght	**11**	College Street	**16**	Ashbourne
2	Swords Pavilion	**7**	Balbriggan	**12**	St. Stephen's Green	**17**	Blanchardstown
3	Sandyford	**8**	Drogheda	**13**	Red Cow	**18**	Donabate
4	Finglas	**9**	O'Connell Street	**14**	Rathgar	**19**	Coolock
5	Ballymun	**10**	Sword East	**15**	DCU	**20**	Glasnevin

Seatown Station is located within the Swords Pavilions zone / area.

In Scenario A, the following changes to journey times are observed:

- The most significant journey time savings from the Swords Pavilions area would be to the Glasnevin area, of approximately 49 minutes in the 2035, 2050 and 2065 AM periods. This is a reduction of over 60% compared to the Do Minimum scenario.
- Public transport journeys from the Swords Pavilions area to other areas in north Dublin, such as the Blanchardstown area, will see savings of approximately 31 minutes in the 2035 AM period and rising to 34 minutes in the 2065 AM period; and to Dublin Airport, savings of approximately 16 minutes in the 2035, 2050 and 2065 AM periods, which is a reduction of approximately 50% compared to the Do Minimum scenario.
- Public transport journeys from the Swords Pavilions area to key Dublin City Centre locations such as O'Connell Street and St Stephen's Green will see savings of between 20 and 24 minutes in the 2035, 2050 and 2065 AM periods when the Proposed Project is in place.
- Public transport journeys from the Swords Pavilions area to areas in south Dublin, such as Sandyford, will see savings of approximately 29 to 31 minutes in the 2035, 2050 and 2065 AM periods.

In Scenario B, the following changes to journey times are observed:

- The most significant journey time savings from the Swords Pavilions area would be to the Glasnevin area, of approximately 28 minutes in the 2035 AM period, and 42 minutes in the 2065 AM period. This is a reduction of nearly 50% in 2035 and nearly 60% in 2065 compared to the Do Minimum scenarios.

- Public transport journeys from the Swords Pavilions area to other areas in north Dublin, such as the Blanchardstown area, will see savings of approximately 26 minutes in the 2035 AM period and rising to 35 minutes in the 2065 AM period; and to Dublin Airport area, savings of approximately 10 minutes in the 2035, 2050 and 2065 AM periods, which is a reduction of approximately 40% compared to the Do Minimum scenario.

- Public transport journeys from the Swords Pavilions area to key Dublin City Centre locations such as O'Connell Street and St Stephen's Green will see savings of between 21 and 30 minutes in the 2035, 2050 and 2065 AM periods when the proposed Project is in place.

- Public transport journeys from the Swords Pavilions area to areas in south Dublin, such as Sandyford, will see savings of approximately 27 to 32 minutes in the 2035, 2050 and 2065 AM periods.

6.1.2 Traffic Impact Assessment

The proposed street level plan for Seatown Station does not provide for a drop-off bay, or any new junctions or pedestrian crossings.

Mode share comparisons between the Do Minimum and Do Something scenarios have been undertaken to understand the percentage change in modal split between the two scenarios. Figure 6.6 presents the changes in private car mode share in Scenario A 2065 AM peak hour, with Figure 6.7 presenting the same for Scenario B 2065. In the AM period in 2035, 2050 and 2065, the private car mode share at Seatown Station decreases by up to 10 percentage points in the zones immediately to the east of the station. The zones to the west of the station see private car mode share decrease by up to 5 percentage points when the proposed Project is in place in 2035 (with the zone immediately to the west of the station seeing an increase of up to 5 percentage points), however this decreases further to 10 percentage points in both 2050 and 2065.

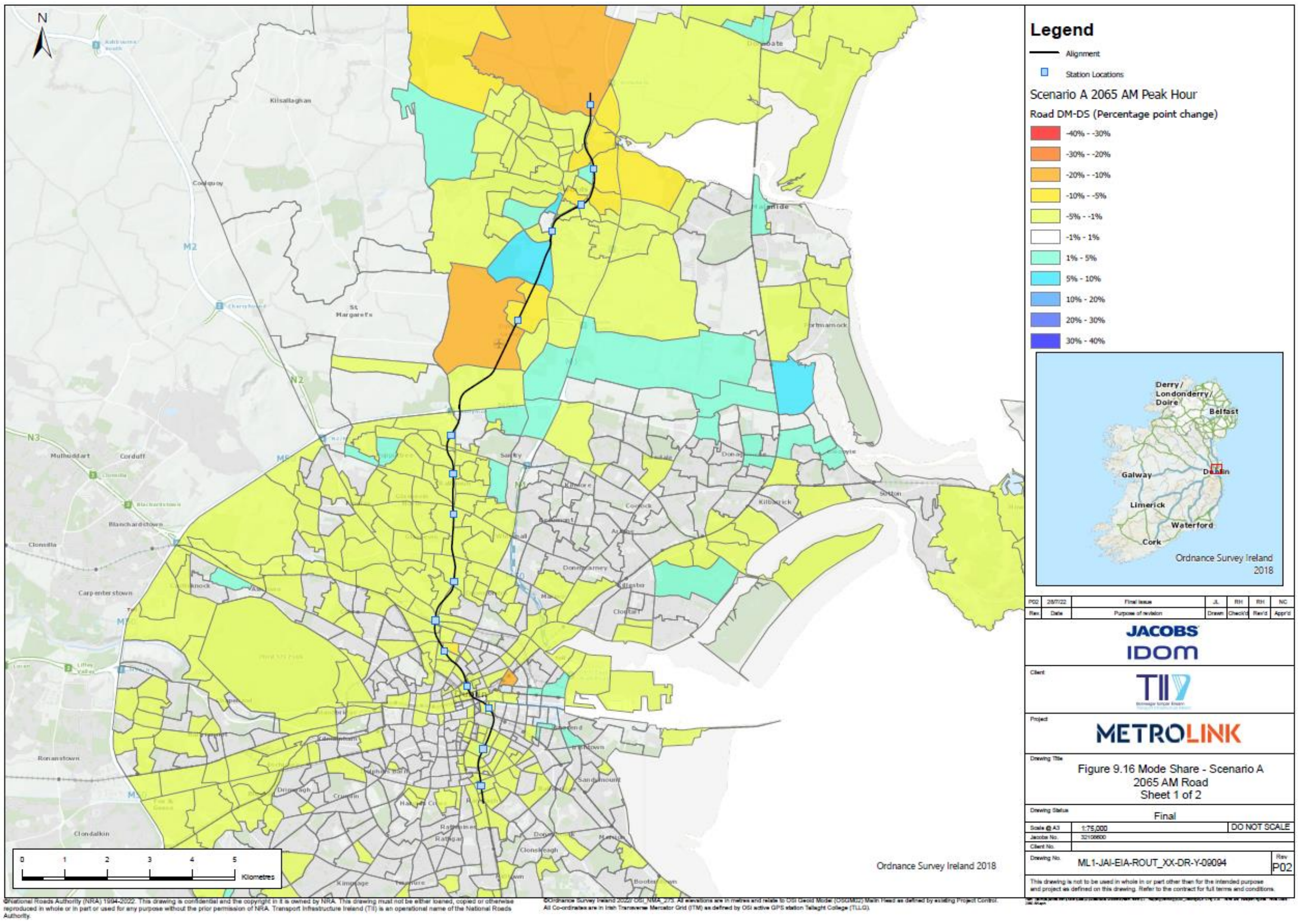


Figure 6.6: Changes in Car Mode Share in Scenario A 2065 AM Peak Hour

In Scenario B in the AM period in 2035, 2050 and 2065, the private car mode share at Seatown Station decreases by up to 10 percentage points in the zones immediately to the east of the station. The zones immediately to the west of the station see private car mode share decrease by up to 5 percentage points when the proposed Project is in place in both 2035 and 2065, and by 10 percentage points in 2050.

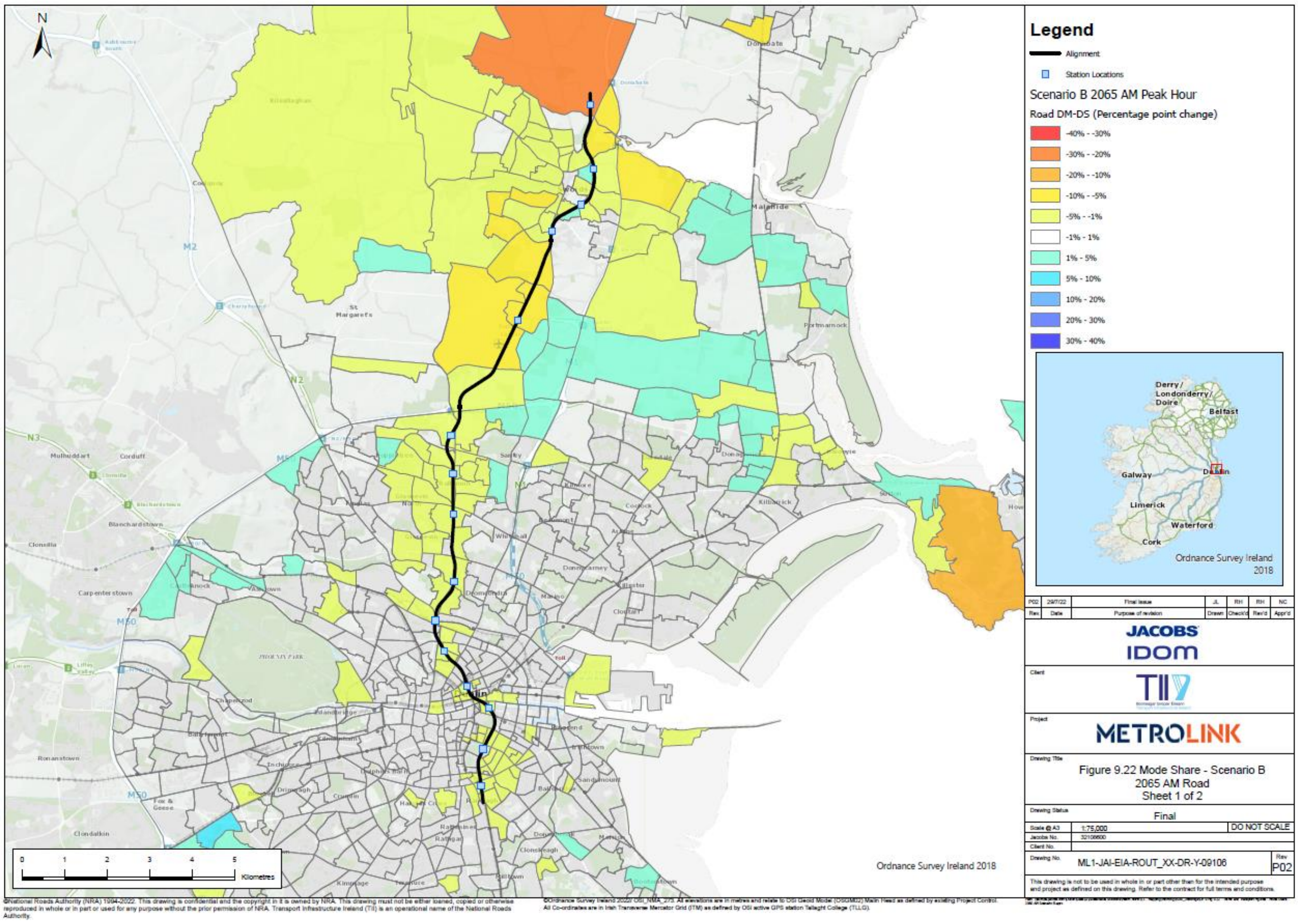


Figure 6.7: Changes in Car Mode Share in Scenario B 2065 AM Peak Hour

Over the 12hr period, the zones within a 2km radius of Seatown Station see a reduction of over 1,900 car trips between the Scenario A 2035 Do Minimum and Do Something scenarios, reaching a reduction of over 2,200 trips in Scenario A 2050. In 2065, there is a reduction of 1,800 car trips between the Do Minimum and Do Something scenarios. In Scenario B, these zones see a reduction of over 1,800 car trips between the 2035 Do Minimum and Do Something scenarios, increasing to a reduction of over 2,000 car trips in 2050, however 2065 sees a reduction of over 1,200 car trips between the Do Minimum and Do Something scenarios.

6.1.3 Pedestrian Impact Assessment

A pedestrian comfort assessment has been undertaken to assess the impact of the Project on the comfort of the footway provisions following the increased volumes of pedestrians on the network in the design years. The Scenario A 2050 design year was assessed, with Scenario A 2065 also assessed as the 'worst-case scenario' for passenger numbers, as this scenario has the highest volume of total AM passenger demand in the future year between both Scenario A and Scenario B (almost 61,000 AM boarding passengers across the alignment in Scenario A, compared to almost 55,000 AM boarding passengers in Scenario B). At all stations, the passenger demand in the AM peak hour is lower in Scenario B than in Scenario A, with the exception of Fosterstown Station where there is a 12% increase in Scenario B. As such, Scenario B has not been assessed, with the exception of Fosterstown Station to ensure that all possible significant impacts are accounted for. The full methodology adopted is detailed in the Overall Project TTA.

Given the limited pedestrian infrastructure surrounding Seatown Station in the baseline scenario, no baseline assessment was undertaken. With the implementation of the Project and the R132 Connectivity Study, improvements will be made to the network, facilitating pedestrian movements to and from the station. As the station lies within Fingal County Council, the guidance of Dublin City Council does not apply, however TfL Pedestrian Comfort Level assessments have been carried out. The assessment finds that all footway provisions around Seatown Station are deemed ‘Comfortable’ in both 2050 and 2065.

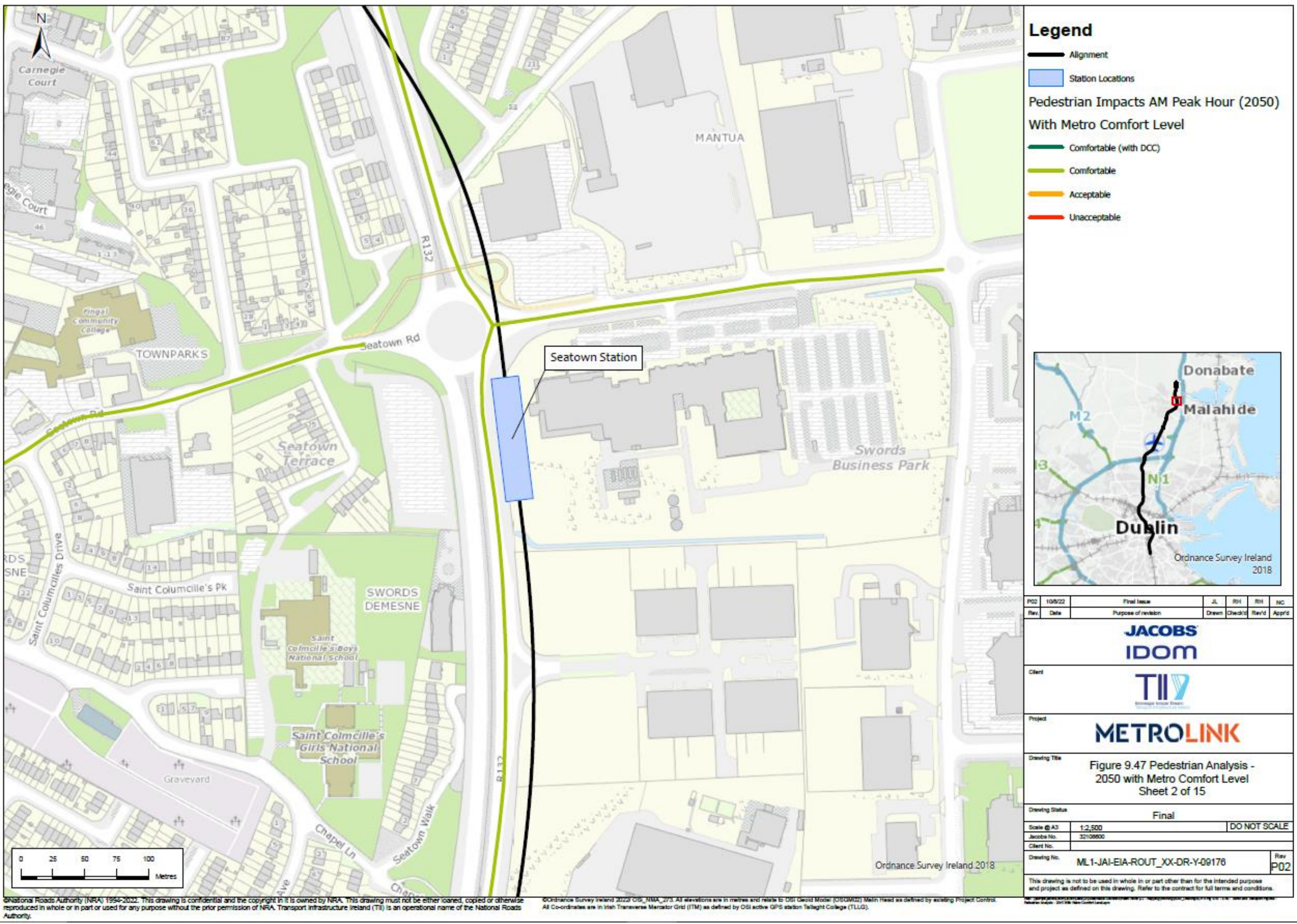


Figure 6.8: Pedestrian Comfort Assessment in Scenario A 2050 AM Peak Hour

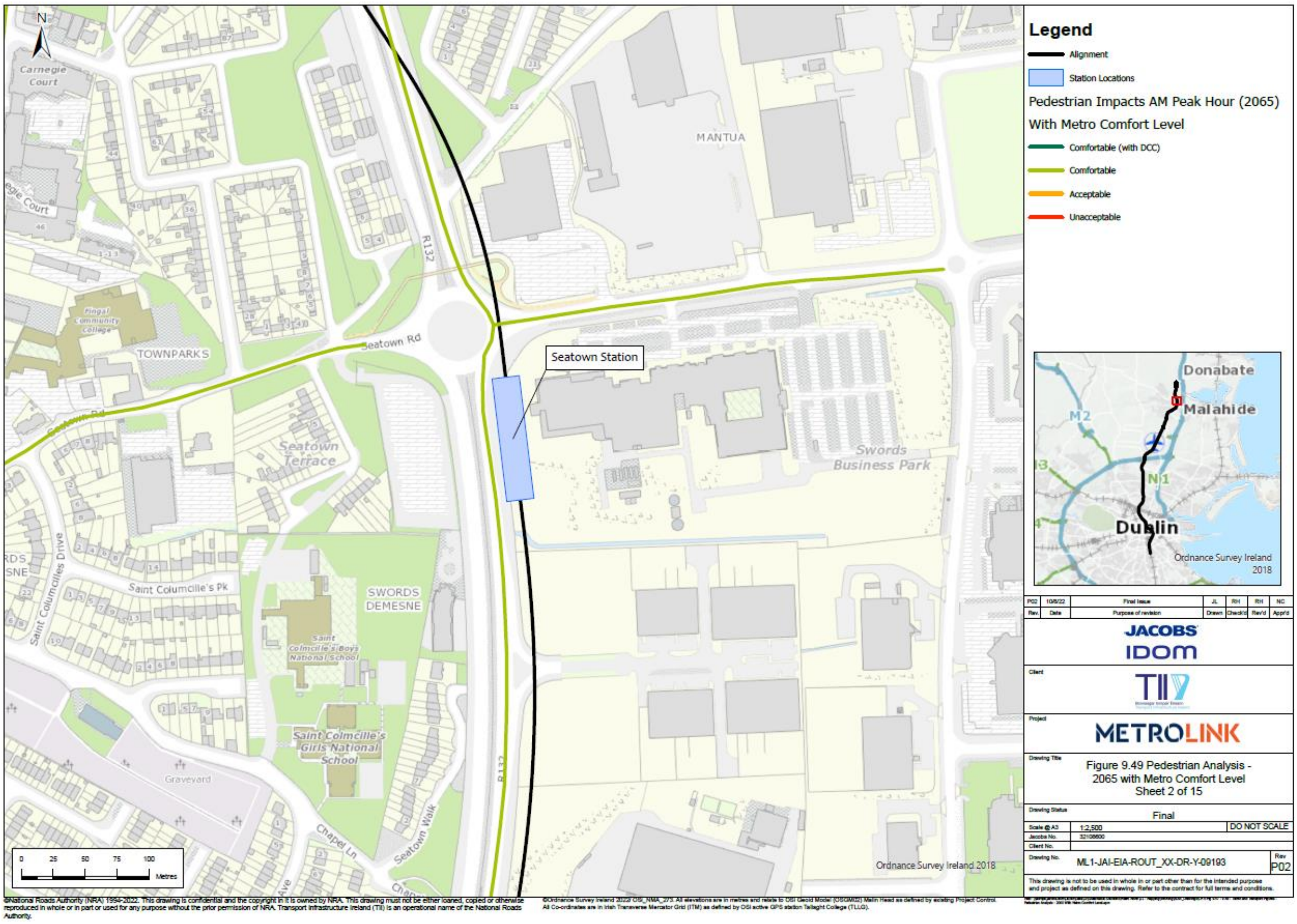


Figure 6.9: Pedestrian Comfort Assessment in Scenario A 2065 AM Peak Hour

6.1.4 Cycle Impact Assessment

The future street level layout at Seatown Station provides for one-way cycle lanes on both sides of the R132, with cycle crossings also provided at the Seatown Road Signalised Junction. With the proposed improvements to the surrounding cycling infrastructure, the Quality of Service during the operational phase will be Level B.

A methodology has been applied to determine the potential demand for cycle parking at each of the stations. This methodology utilises the number of boarding and alighting passengers, the distance of origins/destinations from the station, and the location of the station. The passenger demand from an earlier Opening Year has been utilised to determine the potential cycle demand in the Opening Year, and in the Opening Year +5 Years.

This approach has informed the design and the number of cycle parking spaces provided at each station. Other factors such as the availability of land, potential future land uses and parking supply, and the location of the station have also been taken into consideration by the design team in determining the quantum of cycle parking spaces provided.

For the Seatown Station, a total of 480 cycle spaces are proposed.

6.1.5 Road Safety

A Stage 1 Road Safety Audit has been undertaken for all of the proposed highway works for the Project. This is under a separate cover.

7. Summary

The Seatown Station will facilitate approximately 8,600 passenger movements over the 12hr peak period (07:00-19:00) in Scenario A in 2035, rising to over 10,800 in 2050 and over 13,300 in 2065.

The main catchment origins and destinations of the people boarding and alighting at the Seatown Station will be:

- Origins from residential areas to west of the R132;
- Origins from Seatown Park residential area;
- Destinations at Swords Town Centre; and
- Destinations at Swords Business Park.

The Project will result in increases in public transport mode share between 5 and 20 percentage points for zones to the immediate east of the route and between 1 and 20 percentage points for zones to the west of the Project, in Scenario A for all forecast years. There will be a reduction in road mode share of between 1 and 10 percentage points for the zones surrounding the station with an increase of up to 5% in the zone located immediately west of the station, which is a reduction of approximately 1,800 car trips from the zones surrounding Seatown Station in Scenario A 2065 over the 12hr period. In Scenario B 2065, there is a reduction of 1,200 car trips over the 12hr period.

The Project will result in improvements to the public transport journey times for people in the area, such as a saving of approximately 50 minutes for journeys from Swords Pavillions to Glasnevin, and reductions of up to 30 minutes from the Swords Pavilions Area to Dublin City Centre locations such as O'Connell Street and St. Stephen's Green, in both scenarios.

The station will also provide for 480 cycle parking spaces. The results of the pedestrian comfort assessment indicate that the proposed changes to the street level layout at Seatown Station will be sufficient to comfortably accommodate anticipated demand in the future years.

In overall terms, the Seatown Station will provide for improvements to the public transport network resulting in decreases in private car usage/trips, increases in public transport usage/trips and will facilitate walking and cycling to the station, without significantly impacting on the operation of the road network in the area.

Appendix A. Traffic Flow Diagrams

A.1 Base Flows

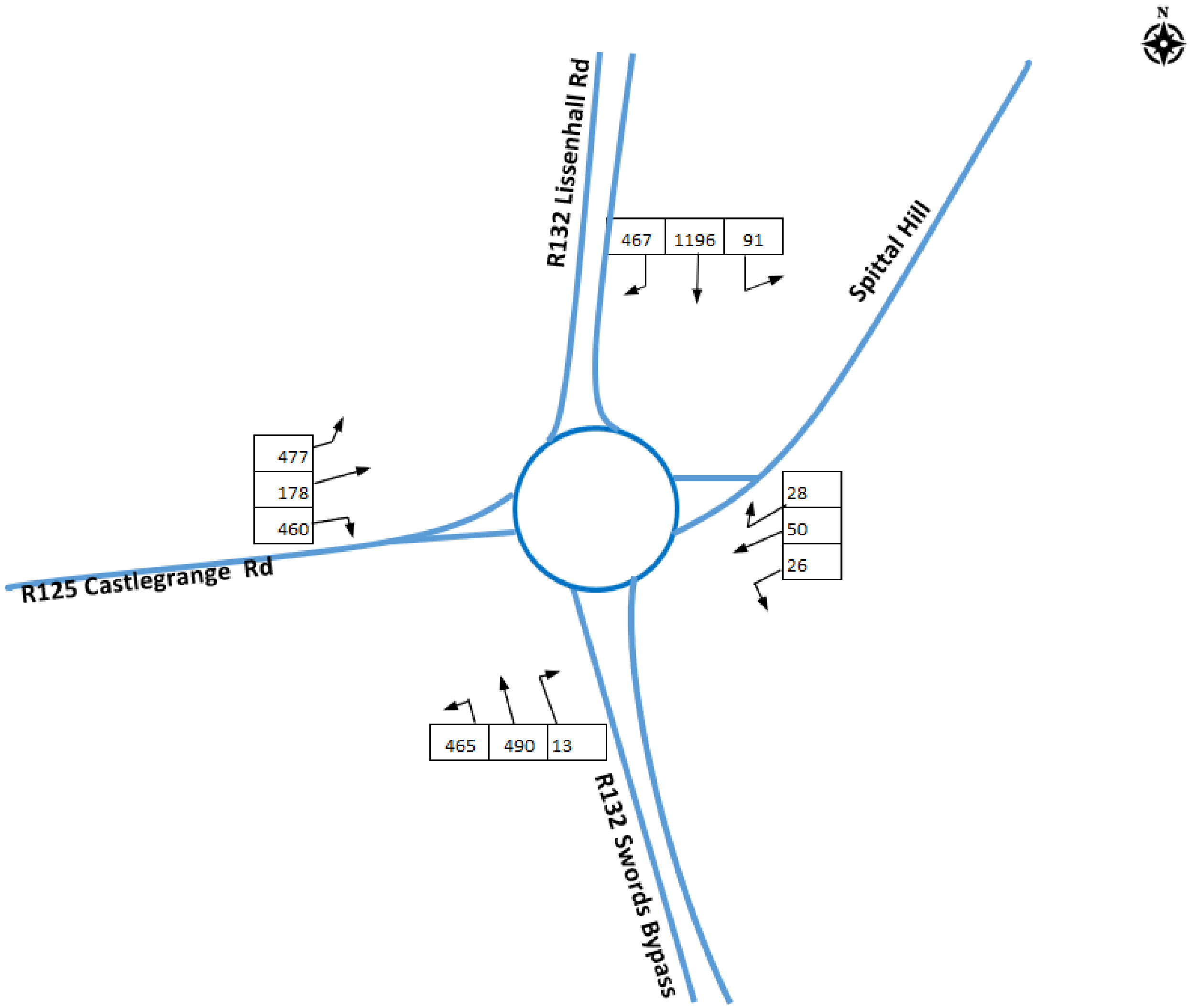


Figure 7.1: Estuary Roundabout AM 2018 Baseline Flows

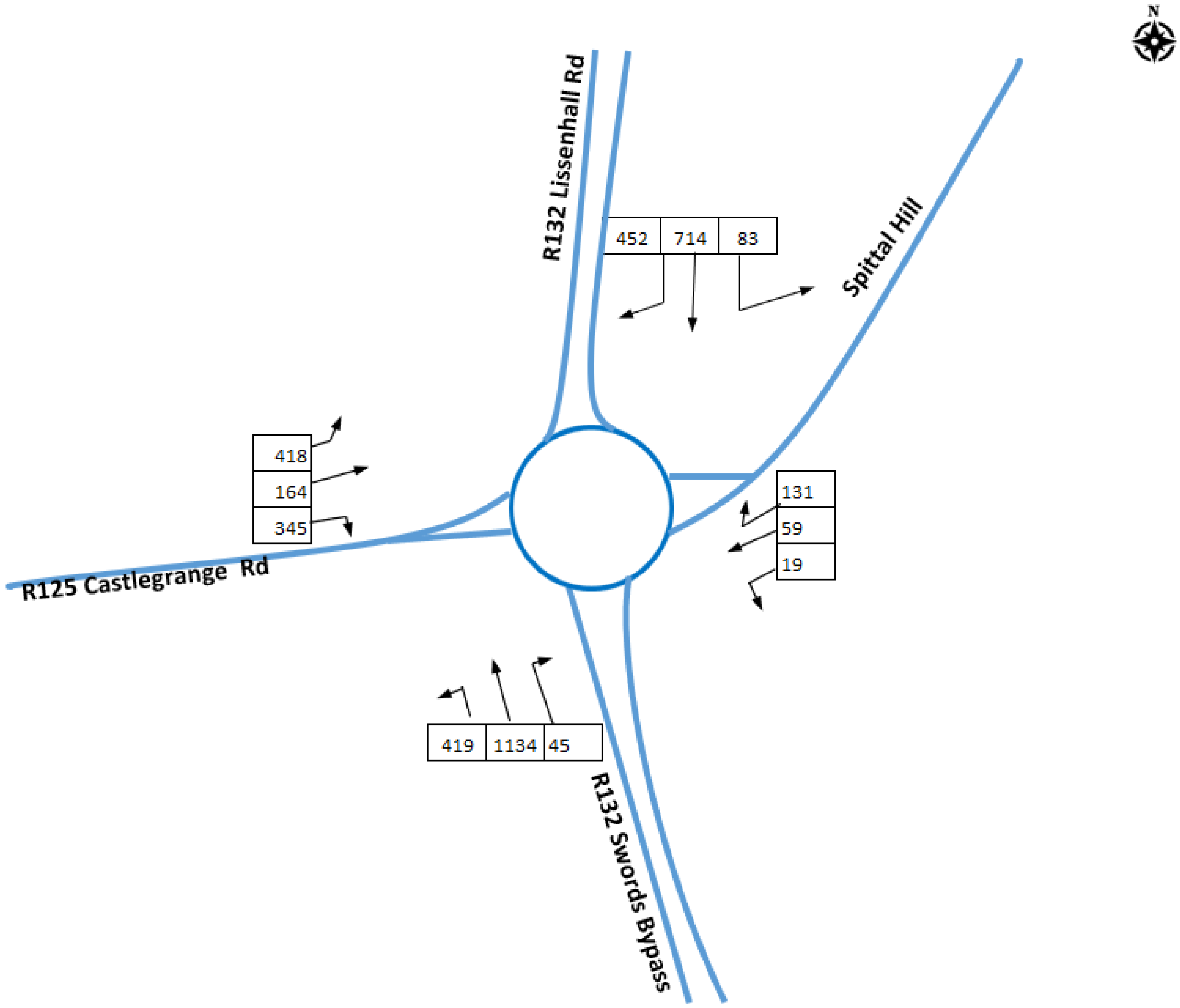


Figure 7.2: Estuary Roundabout PM 2018 Baseline Flows

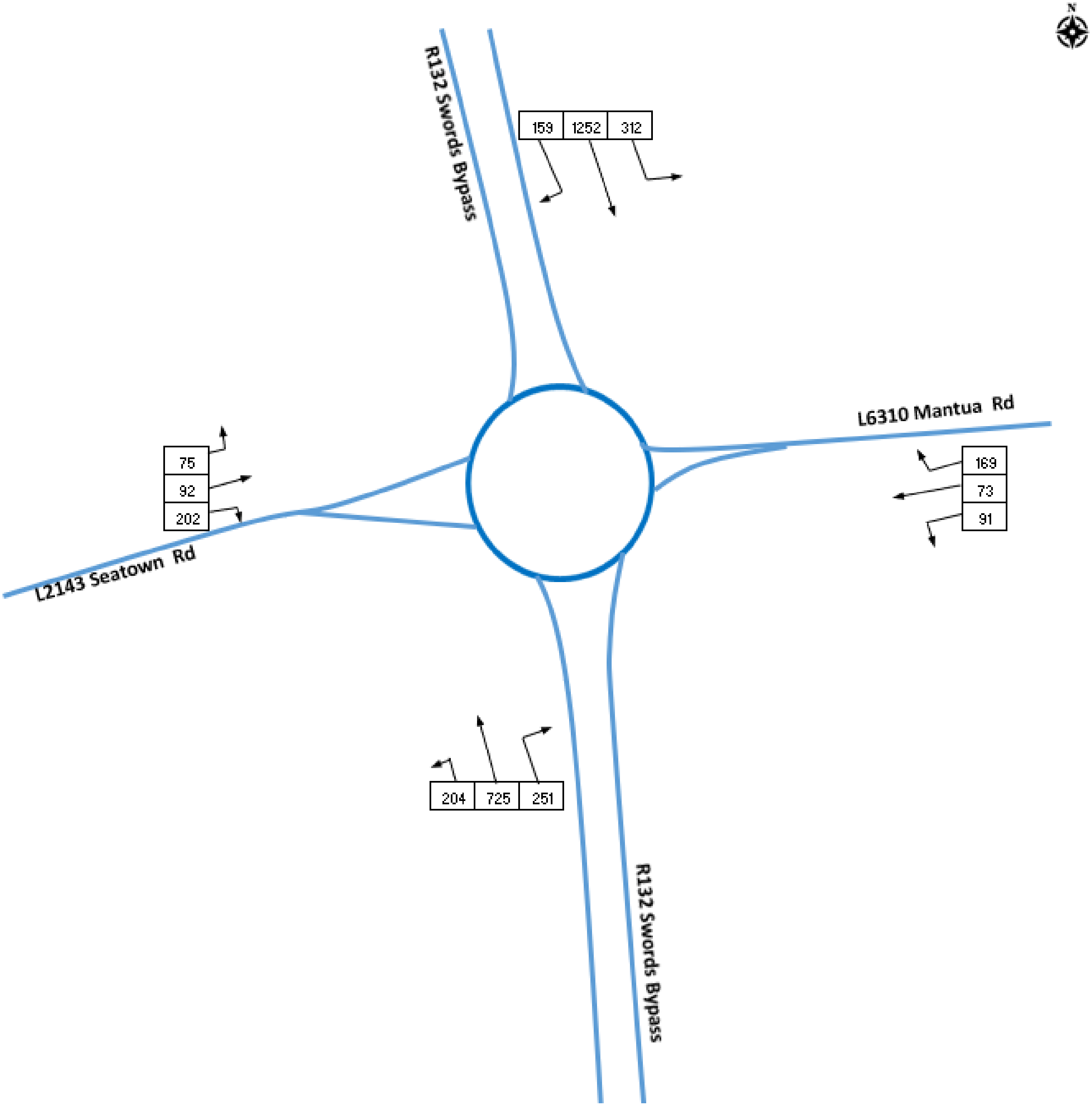


Figure 7.3: Seatown Rd Roundabout - AM 2018 Baseline Flows

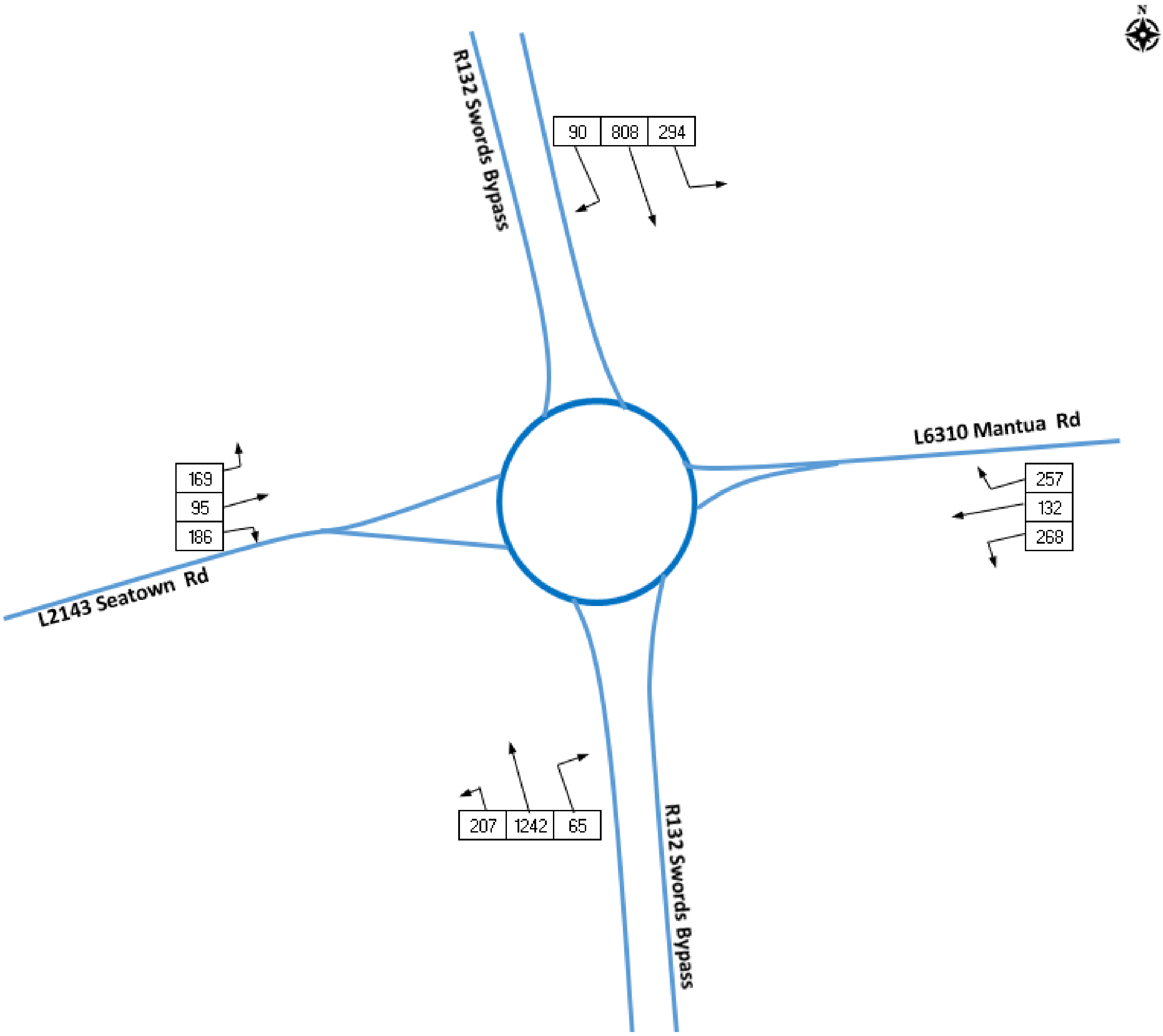


Figure 7.4: Seatown Rd Roundabout - PM 2018 Baseline Flows

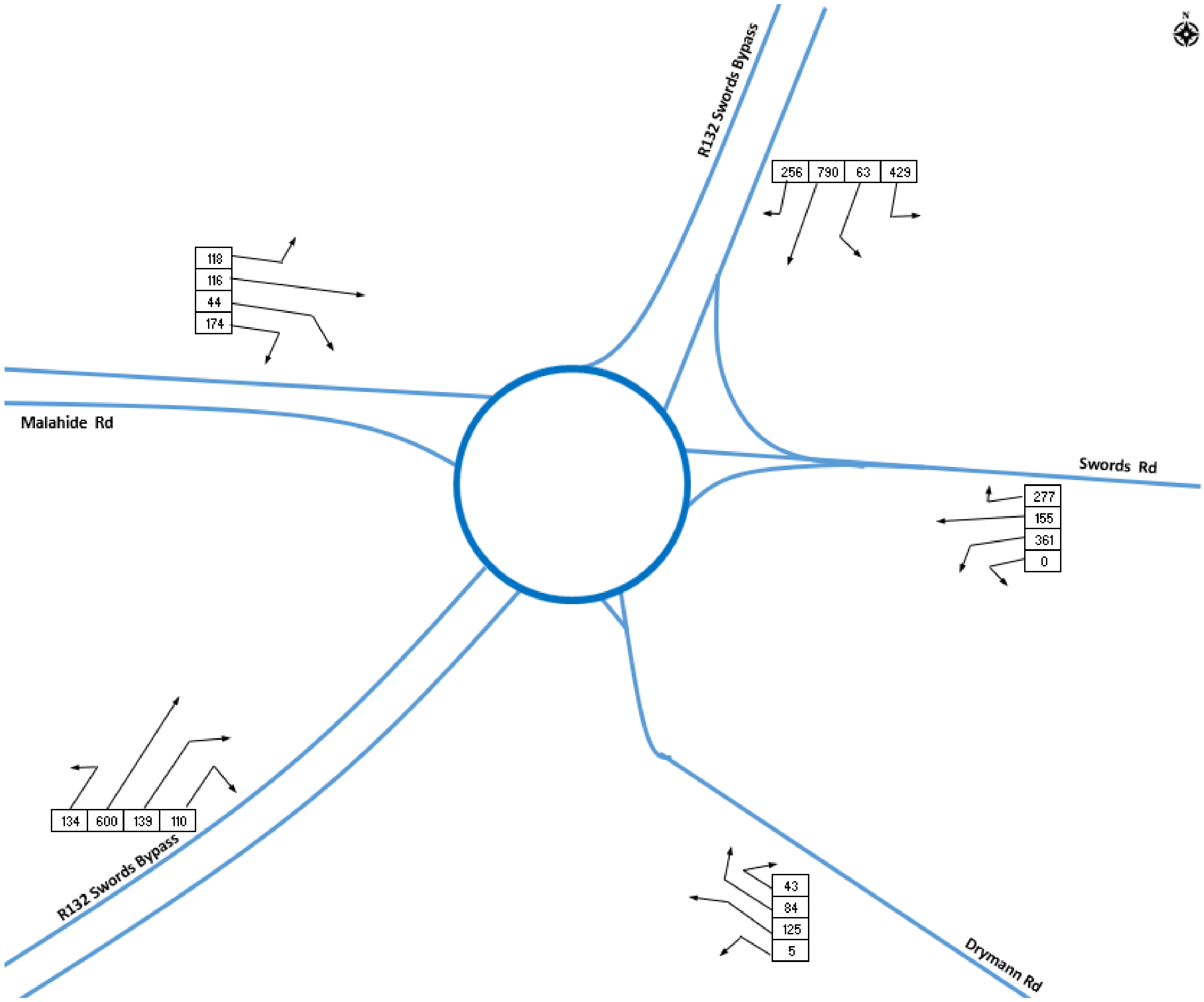


Figure 7.5: Malahide Rd Roundabout - AM 2018 Baseline Flows

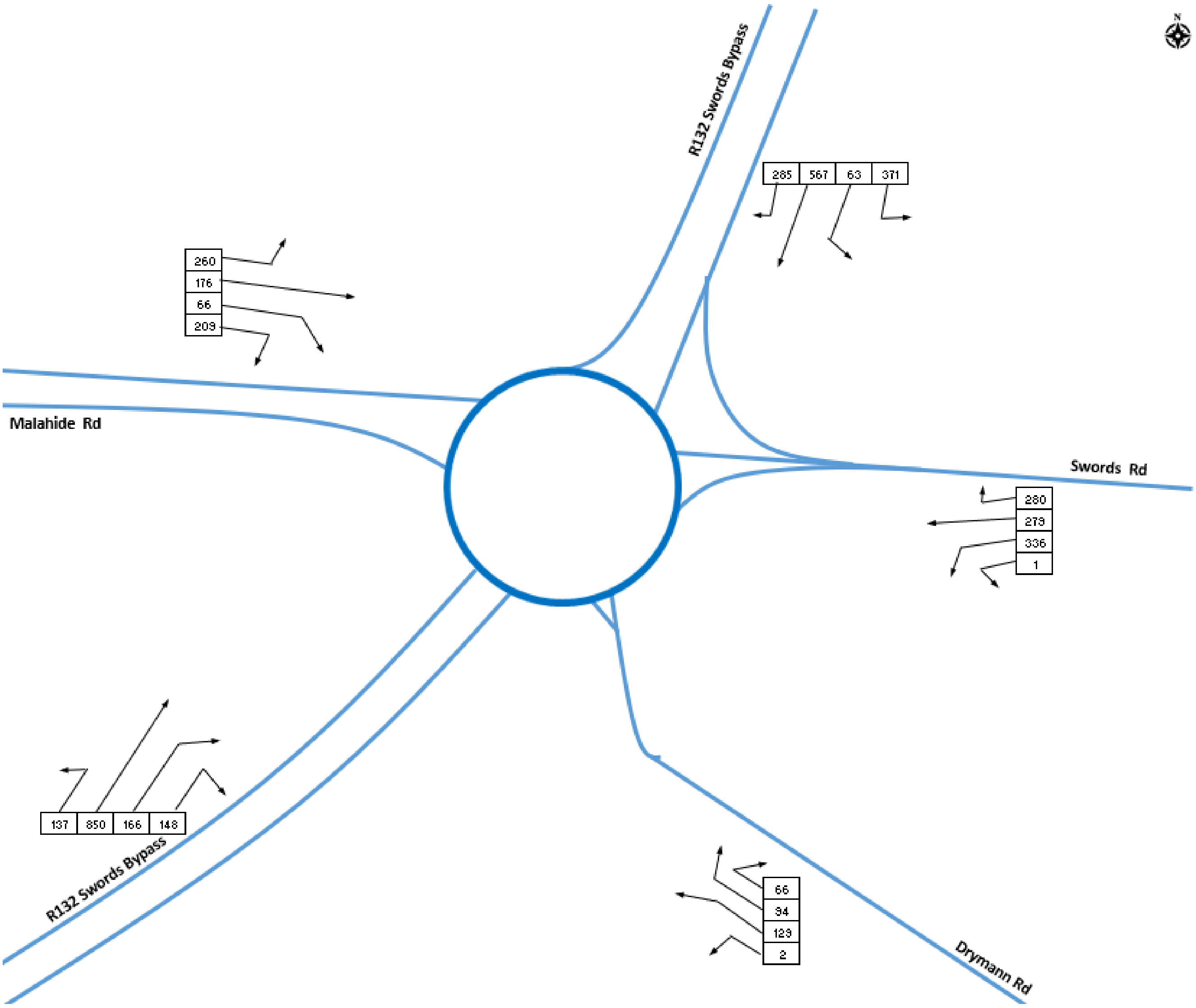


Figure 7.6: Malahide Rd Roundabout - PM 2018 Baseline Flows

Contents

1. Introduction

1.1 Background

Jacobs/IDOM has been commissioned to undertake the Environmental Impact Assessment Report (EIAR) in support of the proposed Dublin MetroLink project (hereafter referred to as the proposed Project). The EIAR is being prepared to assess the environmental impacts of the proposed Project, including in relation to traffic and transport.

This Traffic and Transportation Assessment (TTA) assesses the operational impacts associated with the proposed Swords Central Station on the Traffic and Transport network in the local area. TTA's have been prepared for each individual station as well as an overall TTA for the proposed Project.

Jacobs/IDOM has also been commissioned to undertake a scheme traffic management plan (STMP). The STMP is a standalone report within the EIAR. The STMP assesses the impact of the construction of the Project on all road users and proposes mitigation measures where appropriate.

A summary of the TTAs and STMP will be included within the Traffic and Transportation chapter of the EIAR.

1.2 Assessment Scenarios

In order to provide a rounded assessment of the Project, its impacts have been reviewed for a range of future years, and in the context of two alternative future scenarios. The forecast years are 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). As outlined in Table 1.1, Scenario A includes the project and committed transport schemes only, while Scenario B includes a range of further planned schemes depending on the forecast year.

Table 1.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project
Do Minimum Scenario	Committed transport schemes in the absence of the Project
Do Something - Scenario A	Scenario with the Project and committed transport schemes only
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for Opening year (2035) and planned schemes under the Transport Strategy for the GDA for the Design Year (2050) and the Forecast Year (2065)

Committed transport schemes in the Do Minimum scenario and in Scenario A, that have been progressed through planning and are either under construction or are programmed into the capital expenditure budget, include, but are not limited to:

- Luas Green Line Capacity Enhancement – Phase 1;
- BusConnects Dublin Area Bus Network Redesign; and
- Dublin BusConnects Fares and Ticketing.

Scenario B represents the likely future receiving environment and is based on the delivery of the schemes identified within the National Development Plan for 2035, and on the implementation of the NTA's Greater Dublin Area (GDA) Transport Strategy for 2050 and 2065. As such, this scenario considers the cumulative impacts of interactions between other projects that are most likely to impact on transport movements in the area. Schemes included in this scenario are, but are not limited to:

- Luas Green Line Capacity Enhancement - Phase 2;
- Luas Finglas;
- Luas Lucan;
- Dublin BusConnects Core Bus Corridors (planned 16 corridors); and
- DART+.

More information on each modelled scenario is available in the Transport Modelling Plan (Appendix A9.3).

1.3 Project Overview

The Project will be a high-capacity, high frequency rail line running from Swords to Charlemont, linking Dublin Airport, Irish Rail, the Dublin Area Rapid Transit (DART), Dublin Bus and Luas services, improving integration across public transport network in the Greater Dublin Area (GDA).

As well as linking major transport hubs, the Project will connect key destinations including Swords, Ballymun, the Mater Hospital, the Rotunda, Dublin City University and Trinity College with much of the 19-kilometre route running underground.

When operations commence, there will be trains every 3 minutes during peak periods. This can rise to a service every 90 seconds, with the system capable of carrying a peak line flow of 20,000 passengers per hour in each direction.

1.3.1 Swords Station

The proposed Swords Central Station is shown in Figure 1.1. Swords Central Station will be located to the south of Malahide Roundabout and eastern side of the R132 Swords Bypass. The east side of the R132, the location for the station itself is undeveloped, and is currently designated for mixed use and general development. Residential areas are located to the north along both Drynam Road and the R106. Industrial and commercial units are located to the south of the station site off Lakeshore Drive and retail land uses are found at the Airside Retail Park. To the west of the R132, there are extensive residential areas with the Pavilions Shopping Centre and car park served by the R106 off the Malahide roundabout and situated almost opposite the station site.

This station will be located within a retained cut and will be accessed by pedestrians and cyclists. To facilitate access, consideration has been taken of the proposals for the R132 Connectivity Project and the desire to link the station with the Pavilions Shopping Centre.

Under the R132 Connectivity Project, Malahide Road roundabout will be modified to a signalised junction to facilitate north-south and east-west pedestrian and cycle movements. These modifications will also offset the loss of severance resulting from the demolition of the R132 Malahide Road footbridge, which is required to build the railway line in retained cut / cut and cover on the east side of the R132.

Pedestrian access to the station will be possible through two stairs entrances to the north of the station. Two passenger lifts will also be provided at the station entrances, with pedestrian crossing facilities on the R132 to the north of the station at the entrance to Swords Pavillions Shopping Centre. In addition, 942 bicycle parking spaces are proposed for this station.

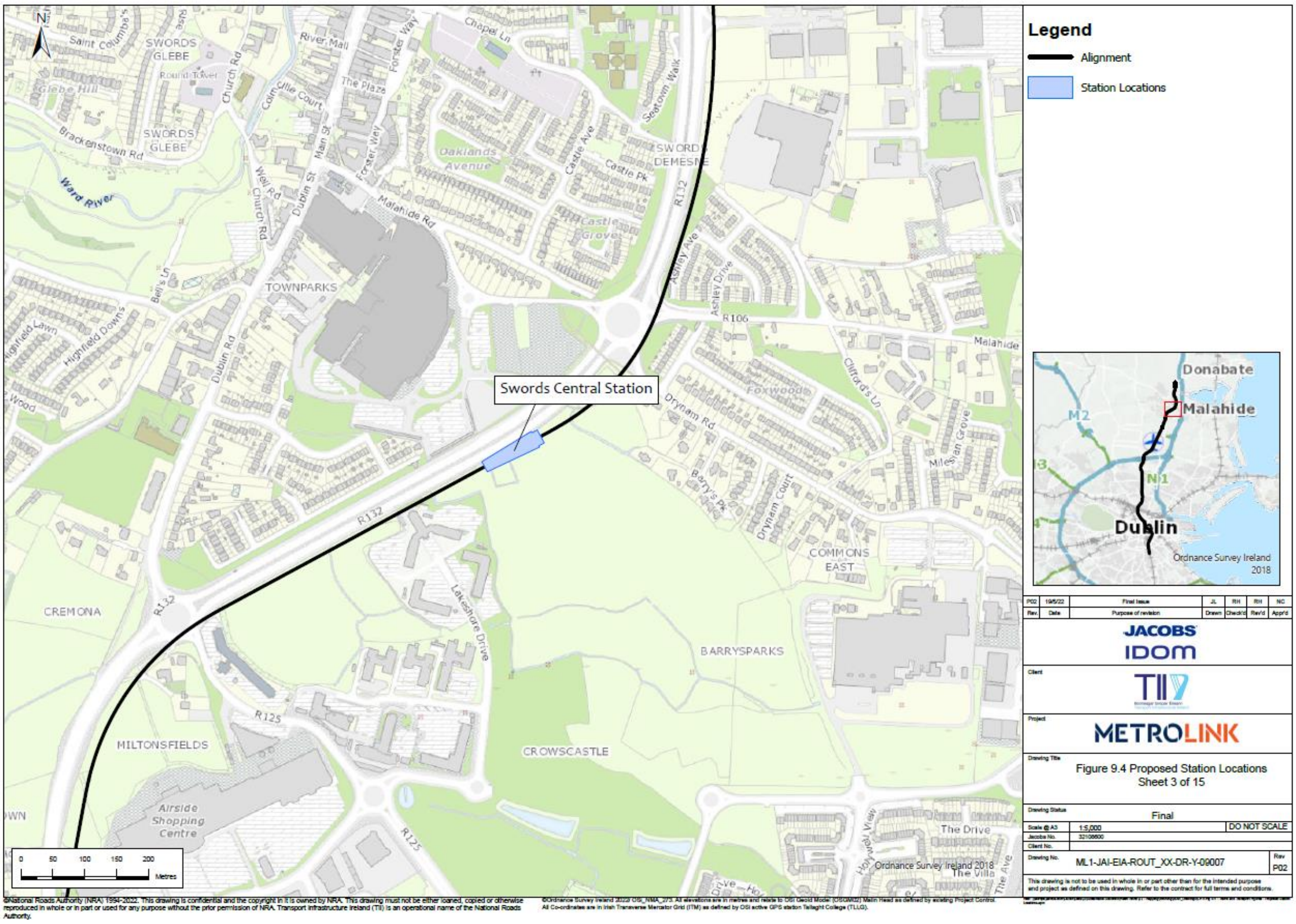


Figure 1.1: Proposed Swords Central Station Location

2. Policy Context

Reference should be made to the Chapter 3 of the Overall Project TTA and Planning Policy Report (ML1-JAI-PLD-ROUT_XX-RP-Y-00020) for further detail on the overall project in relation to key national and regional policies.

- This section assesses the Swords Central Station proposals in relation to the following key local policies and plans:
- Fingal Development Plan 2017-2023;
- Swords Development Strategy;
- Barrysparks and Crowscastle Masterplan 2019; and
- Your Swords: An Emerging City, Strategic Vision 2035.
- Draft Fingal County Council Development Plan 2023-2029; and
- South Fingal Transport Study 2019.

2.1 Fingal Development Plan 2017-2023

2.1.1 Swords Development Strategy

The Fingal Development Plan 2017-2023 provides for significant economic and population growth in Swords, Fingal's 'administrative capital'. A long term development strategy for Swords 'Your Swords: An Emerging City, Strategic Vision 2035' was published by Fingal County Council in 2008 (Fingal Development Plan, FCC), in which the visions is 'to promote and facilitate the sustainable development of Swords Town as a vibrant consolidated major town with a thriving economy; an integrated public transport network; and attractive and highly accessible built environment with the highest standards of housing, employment, services, recreational amenities and community facilities.'

The Development Strategy set out in the plan for Swords is as follows:

- Provide for a much-expanded employment, retail, commercial, educational, civic and cultural base.
- Develop high quality public transport links to Dublin City, Dublin Airport and the GDA, with particular emphasis on the indicative route for New Metro North (now called MetroLink).
- Target and facilitate the development of high tech and advanced manufacturing and other high intensity employment generating uses and service providing uses.
- Promote the development of high-quality living and working environments.
- Develop Swords in the long term in accordance with 'Your Swords: an Emerging City, Strategic Vision 2035'. This strategic vision is contingent on the indicative route for New Metro North (now called MetroLink) coming to Swords.
- Promote lands at Lissenhall as a longer-term strategic area, a mixed use urban district providing for significant levels of employment and residential development.

2.1.2 Barrysparks and Crowscastle Masterplan 2019

These masterplans envisionage that ‘the lands at Barrysparks and Crowscastle will accommodate a mixed-use commercial and residential development that will grow into a key economic cluster for both Swords and the Greater Dublin Area’. With strong transport connections to the MetroLink and BusConnects, the lands will be critical to the ‘economic life of the region’. The lands are approximately 35ha in size, ‘strategically located in the south eastern part of Swords.’ The lands have access to the national road network (M1), with the R125 linking the R132 at Pinnock Hill to the M1, adjoining the Masterplan lands to the south.

The Masterplan lands comprise two zoning objectives. The northern portion of the site (Barrysparks area) is zoned Metro Economic Corridor, while the southern portion of the site (Crowscastle area) is zoned High Technology. The Metro Economic Corridor zoning provides for mixed use, high density empoymment generating activity with associated commercial and residential development, while the High Technology zoning is focused on employment uses such as office or research development.

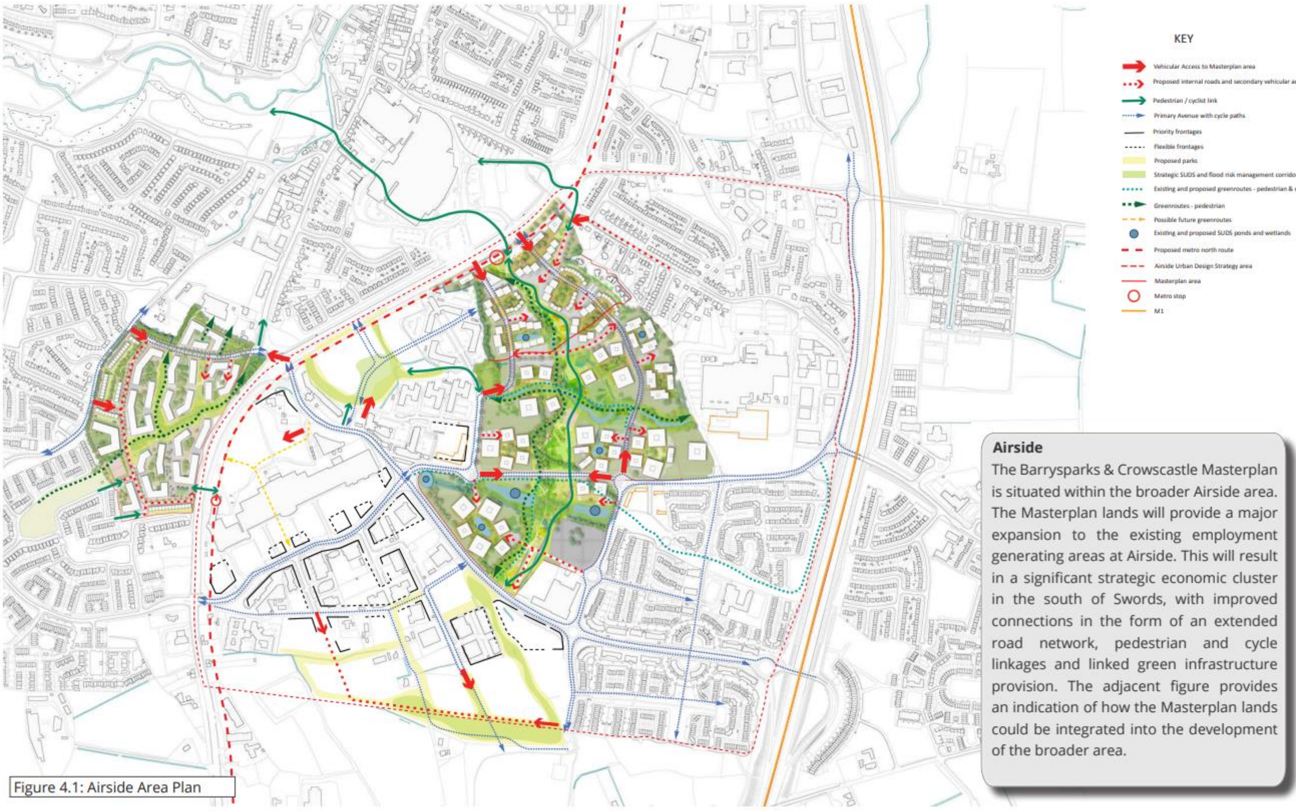


Figure 2.1: Transport and Movement in Barrysparks and Crowscastle Masterplan Lands (Swords Masterplan Part B Barrysparks & Crowscastle)

2.1.3 Your Swords: An Emerging City, Strategic Vision 2035

‘Your Swords: An Emerging City, Strategic Vision 2035’ provides the background and assessment of options developed by Fingal County Council to support the future growth and development of Swords. This document was considered in the compilation of the Swords Masterplan.

The Strategic Vision ensures that Swords will incorporate and be synonymous with:

- A Green City – in terms of the physical landscape and sustainable environmental objectives.

- An Integrated Transport Strategy, comprising significant public transport services (including Metro North (now called MetroLink), and local and regional bus services) and strategically important road infrastructure.

The study envisages the Metro North Economic Corridor (MNEC), along the Metro North alignment (now called MetroLink), facilitating opportunities for high-density, mixed-use, and employment-generating activities, as well as for commercial and residential development. The designated sites for development will form sustainable districts with high connectivity and accessibility and will be provided with the necessary infrastructure.

2.2 Draft Fingal County Council Development Plan 2023 - 2029

Building on the objectives of the Fingal County Council Development Plan 2017-2023, the Draft Fingal County Council Development Plan 2023-2029 recognises the role the delivery of MetroLink will play in connecting Swords to the Dublin City Centre, and the Dublin Airport. Swords is identified as a Key Town within the Development Plan, and the implementation of MetroLink will assist in meeting policies and objectives set out in the Development Plan.

Policy CSP28 – Promote and Facilitate MetroLink

- Promote and facilitate the development of Metrolink, connecting Swords to Dublin Airport and on to the City Centre.

Objective CSO39 – Swords – Dublin Airport

- Support Swords-Dublin Airport as a key location for airport related economic development and employment provision linked to the protection and enhancement of access to Dublin Airport lands including the delivery of Metrolink.

2.3 South Fingal Transport Study 2019

In September 2017, Fingal County Council commissioned SYSTRA Ltd to undertake the South Fingal Study. The South Fingal Transport Study 'is a study of the transport network in South Fingal recommending key transport infrastructure and outlines the levels of land use development that will enable its sustainable growth leading up to the delivery of MetroLink and beyond' (FCC, 2017). As a result, the study considers the most critical road, public transport and active travel schemes that Fingal should implement in the next decade; sustainable ways of improving Fingal's integration and connectivity with Dublin City Centre; infrastructure required to meet demand in advance of the Project; and measures that Fingal County Council should implement to maintain and protect the strategic function of Dublin Airport into the future.

The recommendations identified with specific relevance to the Project include:

- The Swords Western Distributor Road would provide additional resilience to the local network in the context of diverting traffic from Main Street, and in addition to providing direct access to the MetroLink Park and Ride at Estuary;

- Future interchange to the MetroLink from other modes, including bus, walk and cycle should be considered as part of any redevelopment of Swords Main Street and the R132 Swords Bypass; and

- The Swords Western Relief Road is an objective of the Fingal Development Plan with a strategic function to provide a link between the M1/M50 and Dublin Airport to support the long-term growth of Swords.

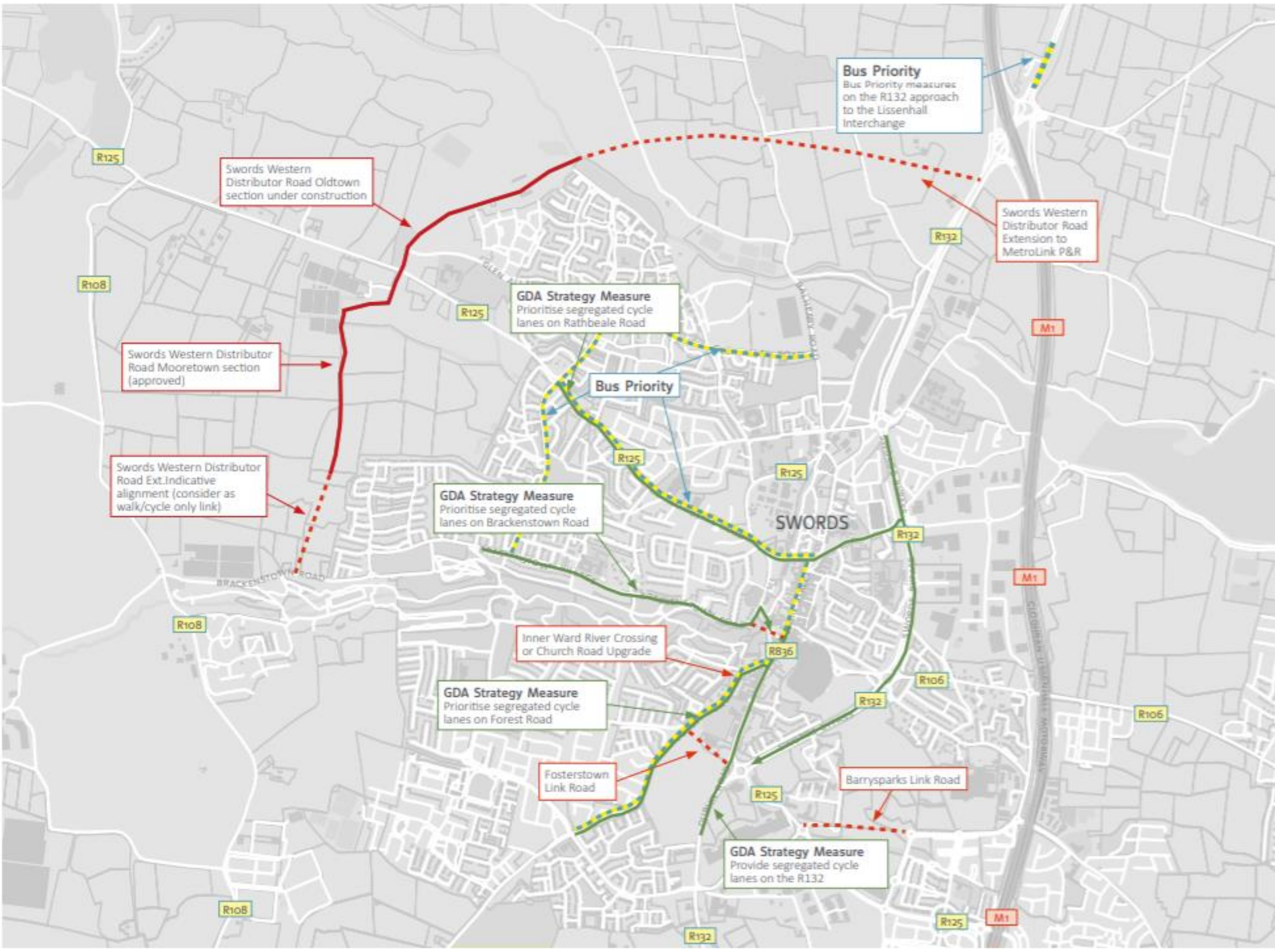


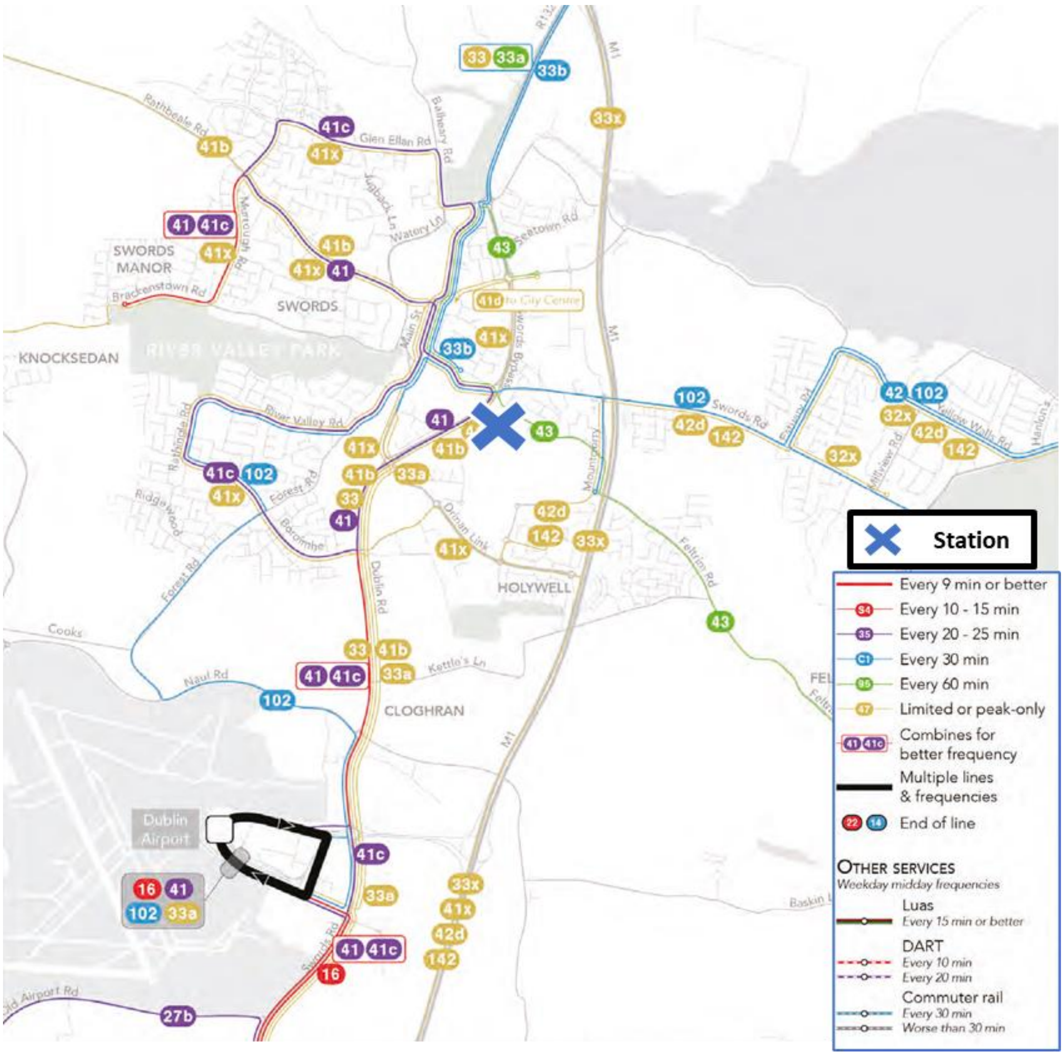
Figure 2.2: Swords Short Term Recommendations Map (source: South Fingal Transport Study)

3. Baseline Conditions

This section describes the existing receiving environment within the vicinity of the Swords Central Station and the wider environs, and identifies the future receiving environment for all modes of transport if conditions are planned to change in advance of the construction of the Project, such as the delivery of other proposed infrastructure projects.

3.1 Existing Public Transport Network

As shown in Figure 3.1, the area surrounding the Swords Central Station is served by bus services that have limited or peak-only frequencies, with bus stops in close proximity to the station. Within a 600m buffer from the station there are 12 bus stops located along the R132, Drynam Road, R106 and Dublin Road, as shown in Figure 3.2. The nearest bus stop is on the R132 serving routes 41 (towards Lower Abbey Street), 41b (towards Lower Abbey Street), 101 (towards Dublin Busaras) and 101x (towards Wilton Terrace).



(Base Source: www.busconnects.ie)

Figure 3.1: Existing Public Transport Provision in Relation to Swords Central Station

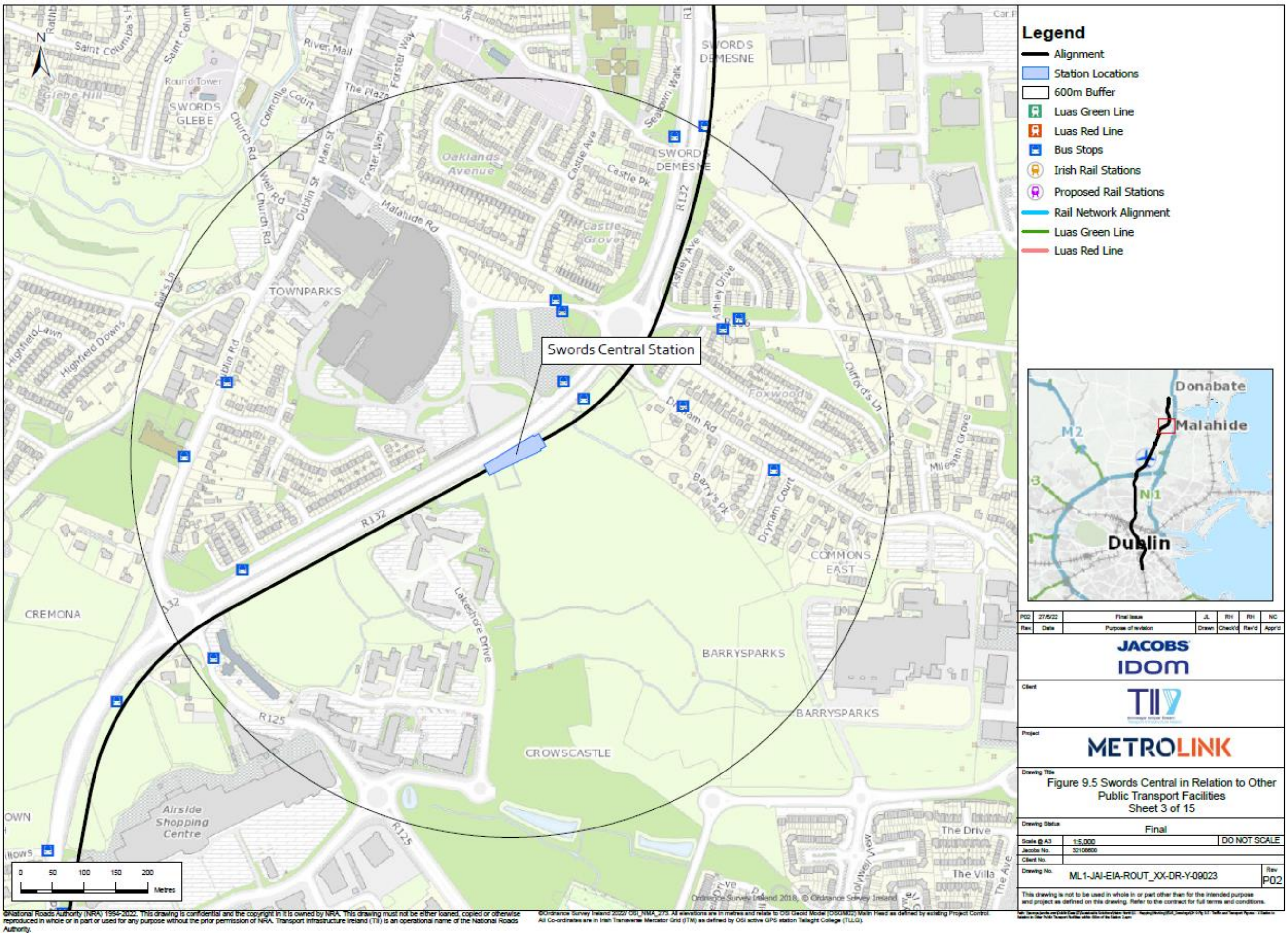


Figure 3.2: Tranport facilities within 600m buffer

The Swords Express also has several routes which serve the R132 in the proximity of the proposed Swords Central Station, including the 500, 503, 500x, 501x and 505x, as shown in Figure 3.3.

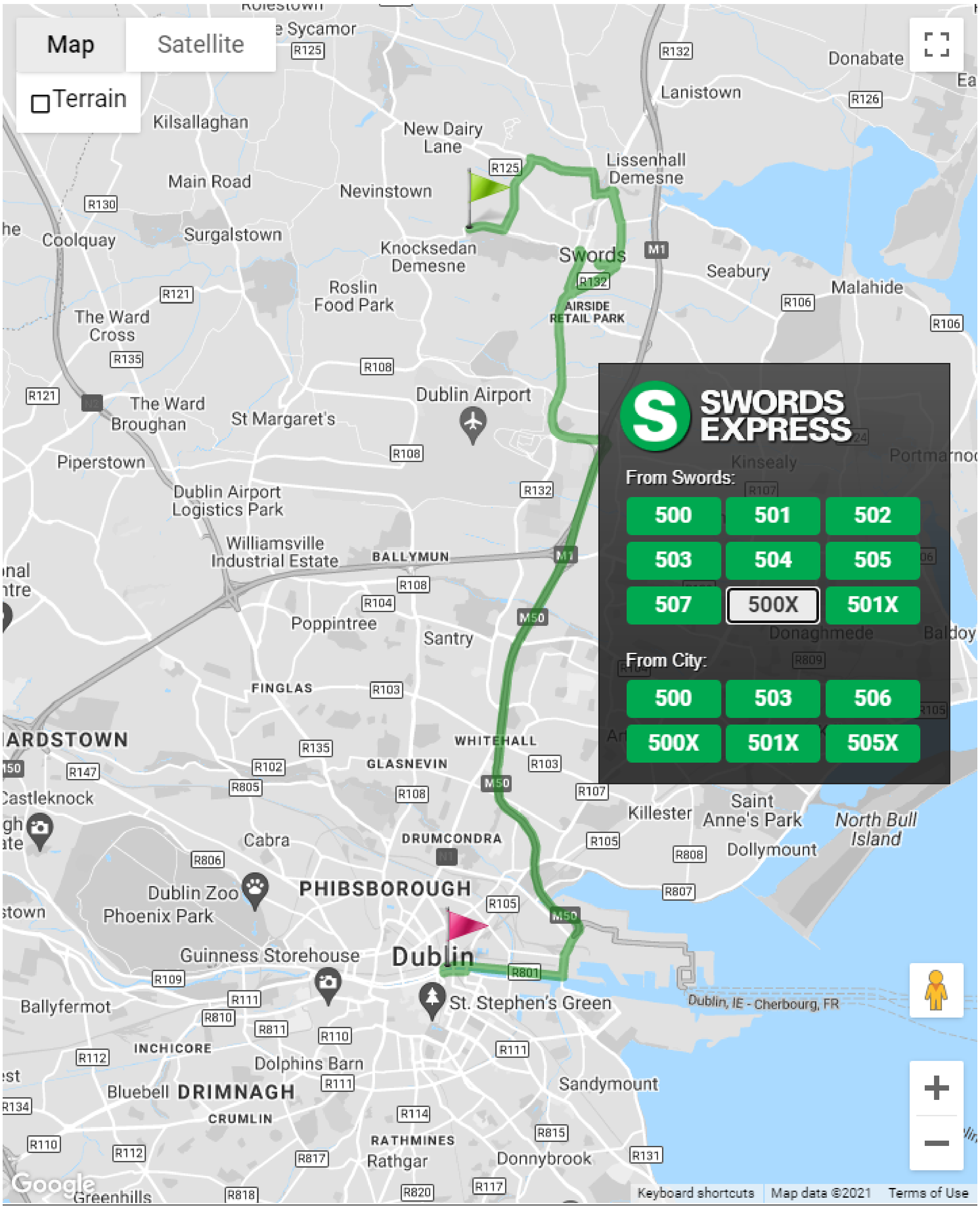
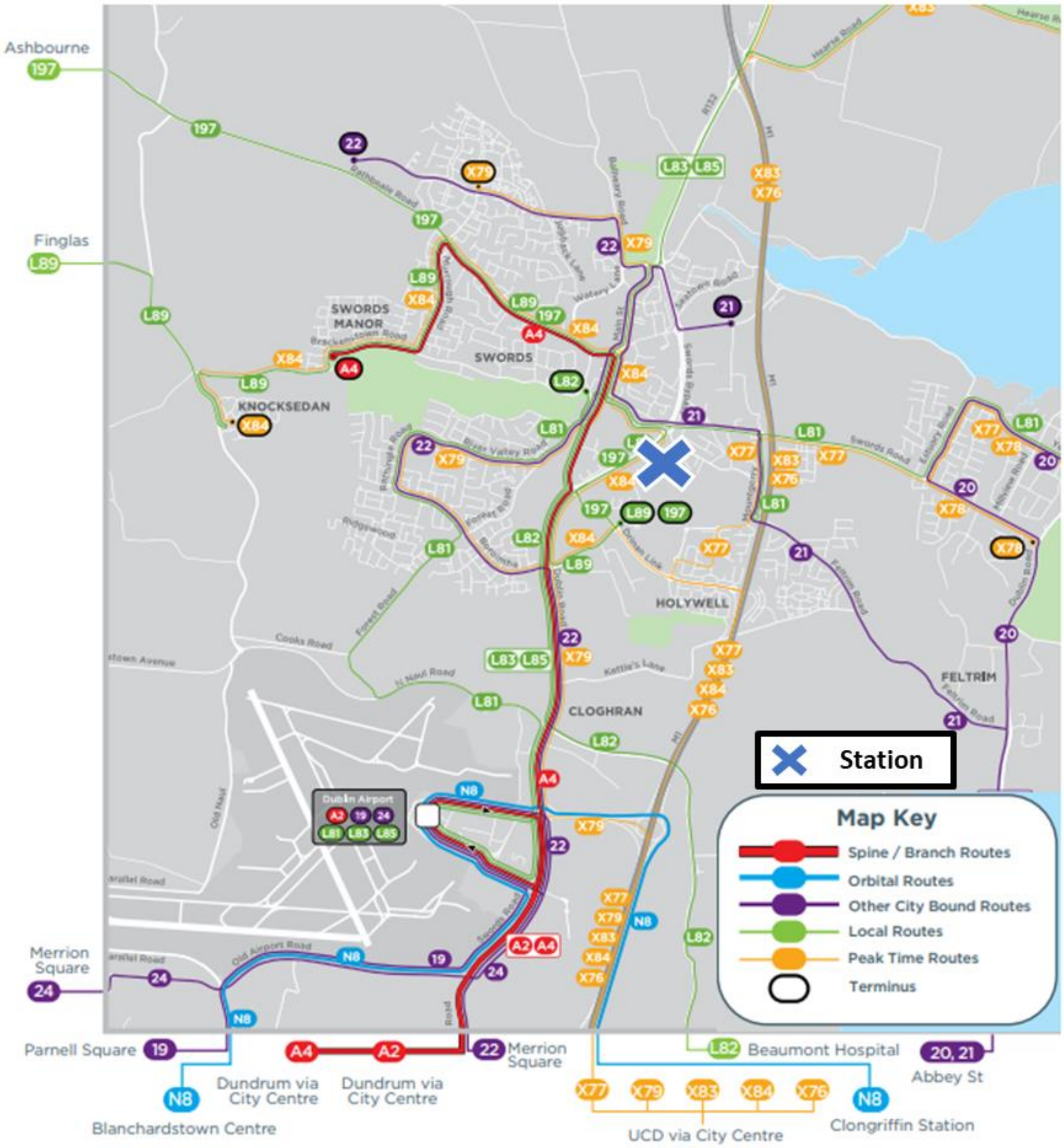


Figure 3.3: Swords Express Routes (www.swordsexpress.com)

3.2 Future Receiving Environment- Public Transport Network

Figure 3.4 shows the location of the proposed Swords Central Station in the context of the proposed Bus Network Redesign. As part of the Bus Network Redesign proposals, Other City Bound route 21 will serve the R106, with Local routes L89 and 197, and peak-only route X84 serving the R132. Swords Main Street to the west of the proposed station will also be served by the A Spine to Dublin City Centre.



(Base Source: www.busconnects.ie)

Figure 3.4: Proposed Bus Network Redsign proposals around Swords Central Station

3.3 Existing Road Network

The road network in the vicinity of Swords Central Station comprises of the R132 to the immediate west and the R106 (Malahide Road) to the north.

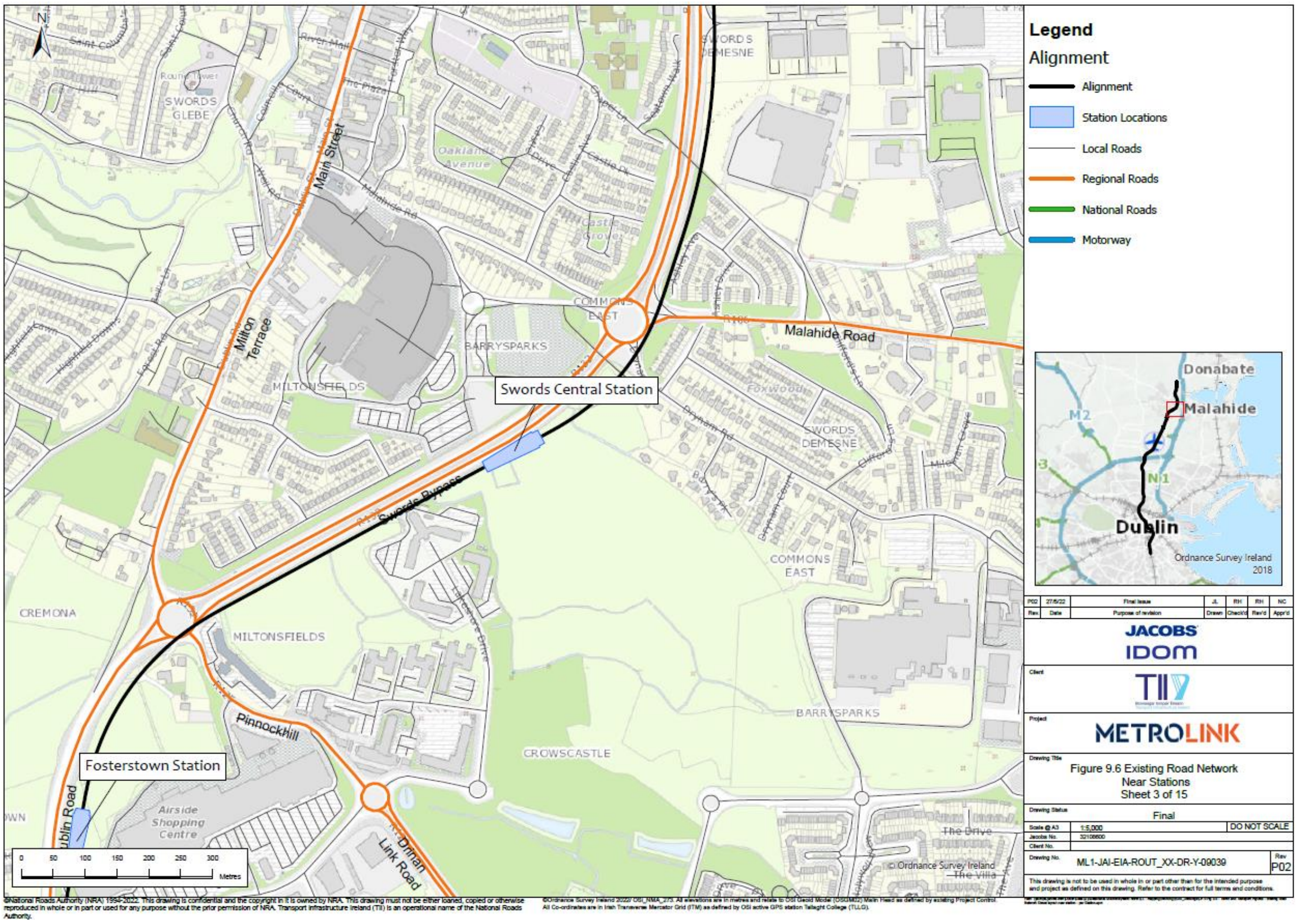


Figure 3.5: Street layout near Swords Central Station

In the vicinity of Swords Central Station, the R132 is a two-way dual carriageway. In its most proximate section to the proposed Swords Central Station, the R132 is approximately 25m wide, comprising of two northbund and two southbound lanes. A bus lane is present both northbound and southbound. The R132 is a regional road that travels between Dundalk in the north and joins the R104 in the vicinity of the Dublin Port Tunnel, east of Ballymun.

The R106, located to the north of the proposed station, connects Swords Town Centre to Malahide and connects to the R836 in Swords Town Centre. In the vicinity of the station, the R106 is a two-way single carriageway of approximately 6m in width.

3.3.1 Junction Turning Counts

The Data Collection Report (ML1-JAI-TRA-ROUT_XX-RP-Y-00023) details the methodology and specification of traffic surveys undertaken for the Project. The survey locations relevant to Swords Central Station are shown in Table 3.1. Vehicle classifications used for the survey were Car, LGV, OGV1, OGV2, PSV, Motorcycle and Pedal Cycle. PCU values were also reported using appropriate conversion factors for each vehicle classification. The resulting PCU values from the survey results have been used for the LinSig modelling.

Table 3.1 – Survey Locations Around Swords Central Station

Junction	Type of Survey
Seatown Road Roundabout (R132 / Seatown Road)	Classified Junction Turning Counts (CJTC)
Malahide Road Roundabout (R132 / R106)	CJTC
Pinnock Hill Roundabout (R132 / R125 / R836)	CJTC
R132 / L2300 / L2305 Signalised Junction	CJTC

3.3.2 Base Traffic Flows

The 2018 base traffic flows for the AM and PM peak periods, for the junctions detailed in Table 3.1 are provided within Appendix A Traffic Flow Diagrams.

3.3.2.1 Seatown Road Roundabout (R132 / Seatown Rd)

The Seatown Road Roundabout is a four-arm non-signalised roundabout. Table 3.2 shows the summary results of the 2018 survey flows at the Seatown Road Roundabout.

Table 3.2 – Junctions 9 Model Result Summary for Seatown Roundabout

Arm	AM Peak		PM Peak	
	Ratio of Flow to Capacity (RFC)	Queue [PCU]	Ratio of Flow to Capacity (RFC)	Queue [PCU]
Mantua Road	0.34	0.6	0.54	1.2
R132 Swords Bypass South	0.62	1.7	0.82	4.5
Seatown Road	0.53	1.1	0.94	9.6
R132 Swords Bypass North	118.42	69.5	0.68	2.1

Results show that the R132 Swords Bypass North arm of the Seatown Road Roundabout will operate above capacity during the AM peak hour with expected queue of 69.5 PCUs (400m). Results also show that the Seatown Road arm of the junction will operate slightly above theoretical capacity during the PM peak hour, with expected queue of 9.6 PCUs (55m).

3.3.2.2 Malahide Road Roundabout (R132 / R106)

The Malahide Roundabout is a five-arm partially signalised roundabout. Signal control is at the following entry arms to the roundabout; the R106 Malahide Road West, the R132 Swords Bypass North and the R132 Swords Bypass South.

Table 3.3 shows the summary results of the 2018 survey flows at the Malahide Roundabout.

Table 3.3 – LinSig Model Result Summary – Malahide Road Roundabout – 2018 Observed Flows

Lane Description	Movement	Weekday AM Peak		Weekday PM Peak	
		Degree of Saturation [%]	Mean Max Queue [PCU]	Degree of Saturation [%]	Mean Max Queue [PCU]
R132 North	Ahead Left	89.00	10.8	91.80	9.6
	Ahead	69.10	7.9	68.10	6.7
R106 Swords Road	Ahead Left	91.50	11.5	94.40	14.7
R132 South	Left	22.70	1.9	21.80	2
	Ahead Left	80.50	9.5	93.10	15.8
	Ahead	78.20	9.1	92.80	16.1
R106 Malahide Road	Ahead Left	72.60	6.9	93.40	14
	Ahead	75.00	7.8	94.80	16.2
Drynam Road	Left U-Turn	54.60	1.6	49.30	1.4
Practical Reserve Capacity (PRC)		-1.7		-5.3	

The results show that the existing Malahide Road Roundabout operates over its practical capacity during both Weekday AM and PM peak hours. A maximum queue of 12 PCUs (69m) was predicted on the R106 Swords Road during the Weekday AM peak hour. While in the PM peak hour, the R106 Malahide Road and R132 South approaches were predicted to experience queues of around 16 PCUs (92m).

3.3.2.3 Pinnock Hill Roundabout (R132 / R125 / R836)

Table 3.4 shows the summary results of the 2018 survey flows at the Pinnock Hill Roundabout.

Table 3.4 – Junctions 9 Model Result Summary for Pinnock Hill Roundabout

Arm	AM Peak		PM Peak	
	Ratio of Flow to Capacity (RFC)	Queue [PCU]	Ratio of Flow to Capacity (RFC)	Queue [PCU]
R132 Swords Bypass	3.38	1.4	0.52	1.1
R125 Pinnock Hill	197.79	42.6	1.04	27.0
R132 Dublin Road	2.31	0.7	0.46	0.8
R836 Dublin Road	4.87	0.9	0.50	1.0

Results show that the R125 Pinnock Hill arm of the junction will operate above capacity during both the AM and the PM peak hours with expected queue of 42.6 PCUs (245m) and 27 PCUs (155m) respectively. The other three arms of the roundabout will operate under capacity during the AM and PM peak hours.

3.3.2.4 R132 / L2300 / L2305 Signalised Junction

The R132 Swords Road / L2300 Boroimhe Road / L2305 Lakeshore Drive is a signalised 4 arm cross road junction.

Table 3.5 shows the summary results of the 2018 survey flows at the R132 Swords Road / L2300 Boroimhe Road / L2305 Lakeshore Drive signalised junction.

Table 3.5 – LinSig Model Result Summary – R132 Swords Road / L2300 / L2305 Signal Junction – 2018 Observed Flows

Lane Description	Movement	Weekday AM Peak		Weekday PM Peak	
		Degree of Saturation [%]	Mean Max Queue [PCU]	Degree of Saturation [%]	Mean Max Queue [PCU]
R132 Swords Road Southbound	Ahead	4.4	0.6	3.80	0.4
	Left Ahead	118.2	85.3	117.3	70
	Right	60.7	9	92.4	16.3
L2305 Lakeshore Drive	Right Ahead Left	120.4	41	116.4	65.8
R132 Swords Road Northbound	Ahead Left	48.3	4.8	31.0	3.9
	Ahead Right	121.2	70	119.9	85.1
L2300 Boroimhe Road	Left Ahead Right	118.9	97.9	117.9	67.1
Practical Reserve Capacity (PRC)		-34.7		-33.2	

The results show that the existing R132 Swords Road / L2300 Boroimhe Road / L2305 Lakeshore Drive signalised junction operates over its practical capacity during both weekday AM and PM peak hours with PRC of -34.7 and -33.2 respectively. All junction arms operate above their practical capacity during both peak hours.

3.3.3 Forecast Traffic Growth

Forecast traffic growth rates have been obtained from the Eastern Regional Model (ERM) for future years 2035, 2050 and 2065, for the appropriate scenario.

3.4 Future Receiving Environment – Road Network

The Donabate Distributor Road opened as of March 2020, running in an easterly direction from the R126 Hearse Road on the south-west of Donabate village, across the Dublin-Belfast railway line, before heading in a northerly direction to reconnect with the R126 on the Portrane Road. The new 4km road will alleviate traffic at Donabate village and provide alternative access to Portrane and the eastern parts of Donabate. Footpaths and off-road cycle facilities are also included along the extents of the road.

The Swords Western Relief Road (SWRR) is an objective of the Fingal Development Plan 2017-2023, which is proposed to connect the R132 north of the M1 Lissenhall junction and proceeds for approximately 9km through rural Fingal to the N2 north of the M50. The SWRR ‘could remove significant volumes of traffic from the Swords Town Centre area, as well as serving strategic traffic between the M1 and M2/M50 corridors.’ It could also ‘serve the proposed strategic park and ride, minimising the amount of traffic utilising limited carrying capacity on the existing and proposed local road network in Swords.’

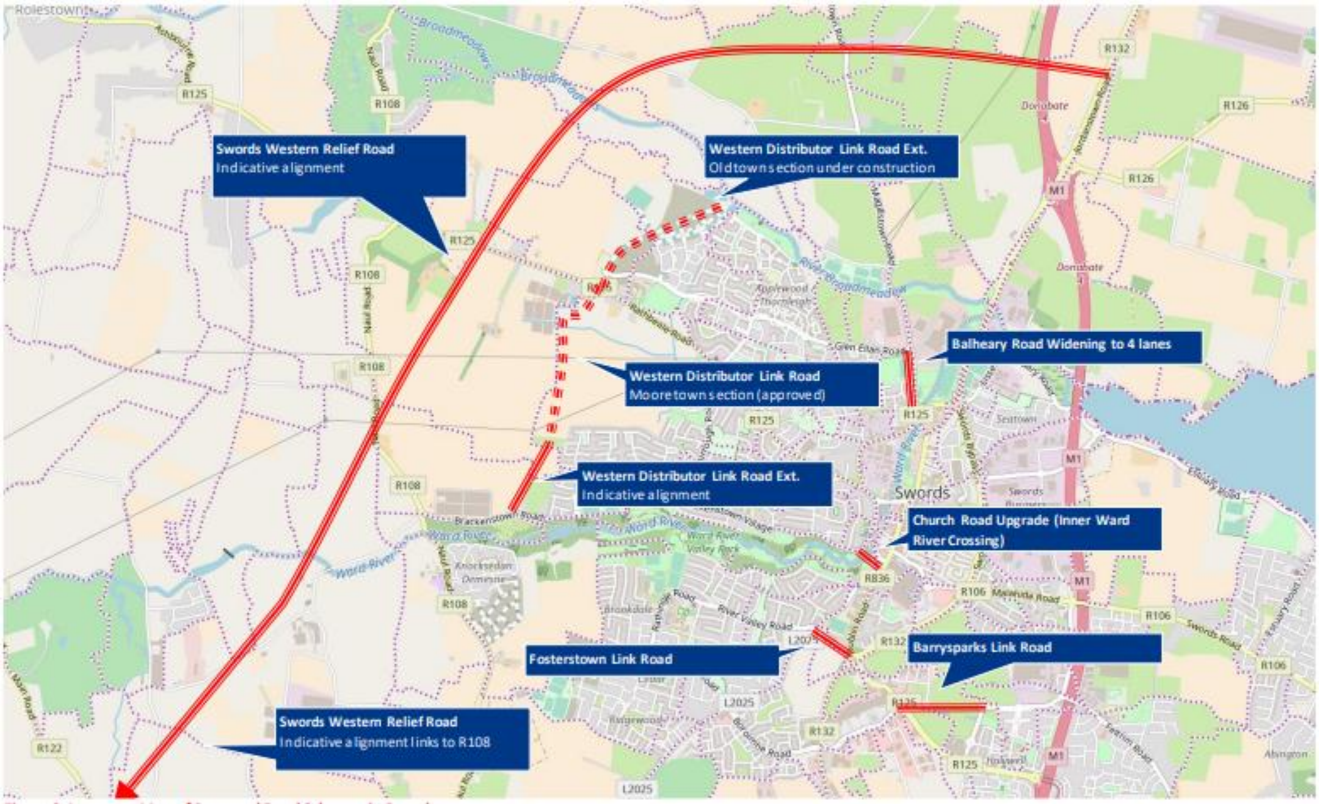


Figure 3.6: Indicative Alignment of Swords Western Relief Road (South Fingal Transport Study – Swords Sub Report)

Fingal County Council, in conjunction with the National Transport Authority, seeks to improve connectivity for pedestrians and cyclists along the R132 by implementing signalised junctions at the current Malahide Road Roundabout, Seatown Road Roundabout and Estuary Roundabout, this scheme is referred to as the R132 Connectivity Project.

3.5 Existing Pedestrian Network

There is a pedestrian footbridge over R132 on the south side of the Malahide Road Roundabout providing a link from Pavillions Shopping Centre and the Town Centre to the proposed station.

There is a footway approximately 1.5m wide on the northbound side of the R132 between the Swords Pavillions entrance and the Malahide Road Roundabout. There are pedestrian crossings on the Drynam Road arm of the Malahide Road Roundabout, and on the R106 East arm. Both crossings are signalised, with tactile paving.

3.5.1 Pedestrian Link Counts

The Data Collection Report (ML1-JAI-TRA-ROUT_XX-RP-Y-00023) details the locations around Swords Central Station where pedestrian surveys have been undertaken.

3.5.2 Baseline Accessibility Review

A baseline accessibility assessment has been undertaken to establish existing walking provision relevant to the proposed Swords Central Station. Catchment maps prepared for the accessibility analysis for walking are based on two criteria, the average speed for each mode and the existing road network. Therefore, maps do not reflect existing access restrictions for private roads and motorised roads.

As the AZ1 Northern Section lies within FCC bounds, the footway provisions have not been assessed against the DCC pedestrian comfort guidance, however the assessment against the TfL Pedestrian Comfort Calculator has been undertaken. At Swords Central, the footways on the R132 Swords Bypass and Drynam Road are deemed 'Uncomfortable' due to their restricted widths of below 2m. The R106 Malahide Road and Dublin Road are considered to be 'Comfortable' for the existing pedestrian demand.

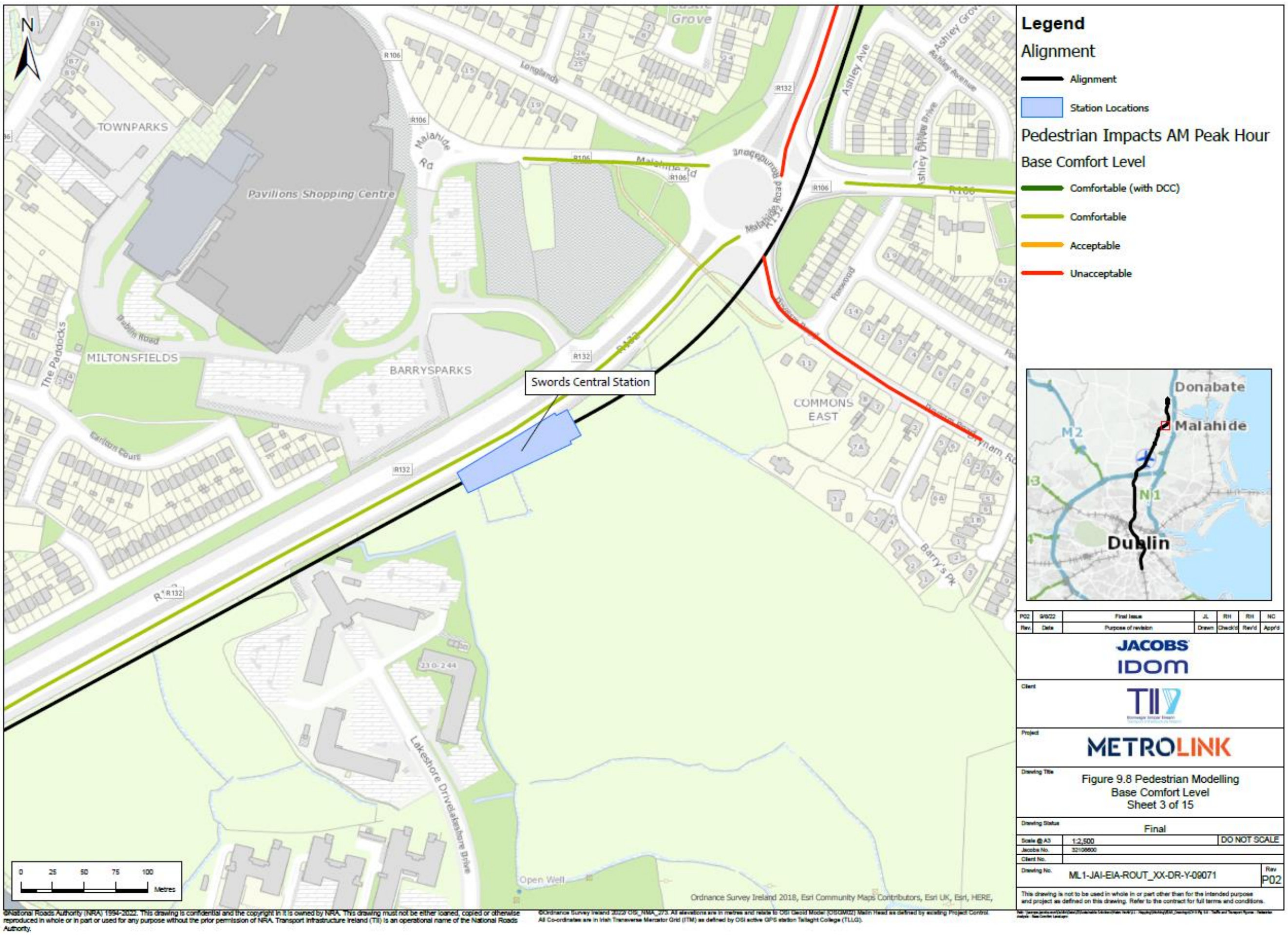


Figure 3.7: Baseline Pedestrian Comfort Assessment at Swords Central

The proposed Swords Central Station is located in close proximity to Swords Business Park and North Dublin Corporate Park, in addition to the Seatown Park residential area located to the northeast of the station.

Figure 3.8 illustrates a 5-minute walking, 10-minute walking and 15-minute walking catchment from the Swords Central Station.

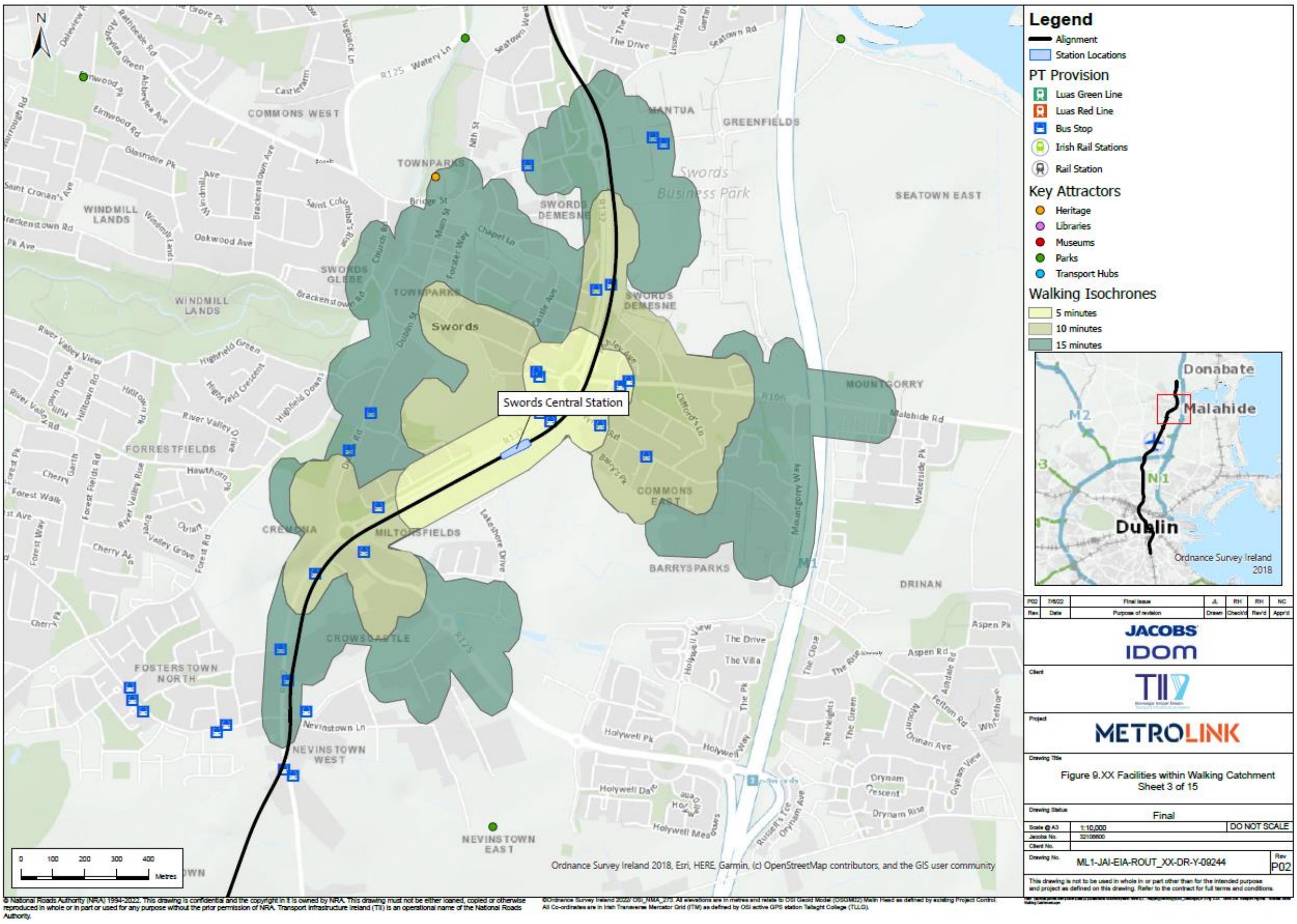


Figure 3.8: Swords Central Station Walking Catchment Area

Table 3.6 below lists local amenities within the 5-minute walking, 10-minute walking and 15-minute walking catchments from the Swords Central Station.

Table 3.6: Local facilities and amenities within the walking catchment area

Facilities within 5min walking	Facilities within 10min walking	Facilities within 15min walking
Fujitsu Ireland Limited	Pavillions Shoping Centre	Swords Main Street
Bus stops at Malahide Roundabout	Badgers Den Montessori School	North Dublin Corporate Park
Longlands Residential Area	Swords Montessori School and Creche	Ward River Valley Park
	Travelodge Dublin Airport North Swords	Swords Castle
	Swords Veterinary Hospital	Fingal County Council
	Lidl Swords- Dublin Road	St. Colmcille's Girls National Catholic School
		St. Colmcille's Catholic Church
		Feitrim Industrial Park

3.6 Future Receiving Environment - Pedestrian Network

As part of the Barrysparks and Crowscastle Masterplan, there are a number of green infrastructure objectives for the Masterplan lands, including:

- 'Provide a central north-south green corridor encompassing pedestrian and cyclist infrastructure and both active and passive open space amenities connecting from the R125 to the south of the site to the R132 to the north.'
- 'Provide a pedestrian and cyclist connection from the proposed central spine to the existing open space area at Holywell Avenue to facilitate movements to the Pavillions, Swords Main Street and into a redesigned Ward River Valley Park as set out in Swords Masterplan 2009.'

'Green corridors are envisaged to run north-south and east-west of the Masterplan lands, providing a key link for pedestrians/cyclists from the station on the R132 to the Tesco Shopping Centre on the R125 and to the residential community of Holywell, and in time to Holywell Park to the south.' The proposed green corridors adjacent to the Swords Central Station will provide pedestrian and cyclist connectivity from the Holywell area to the Swords Central Station (as shown in Figure 2.1).

As part of the R132 Connectivity Project, the realignment of the existing roundabouts to signalised junctions will improve connectivity across the R132 through the provision of signalised pedestrian crossings and improved footway provisions.

3.7 Existing Cycle Network

Figure 3.9 illustrates Swords Central Station within the GDA Cycle Network. This section of the R132 is designated as a Feeder Route, with Secondary routes nearby to the north of the proposed station. There are limited cycle facilities in this section, however bus lanes are present on the R132 Swords Bypass offering a shared use provision with up to a Level B Quality of Service. The provisions in this section range in significance and sensitivity (from low to high) due to the proximity to Swords Town Centre and a number of industrial estates.

Cycle parking is available at the shopping centre, however there is no existing provision on the R106 to access these facilities.

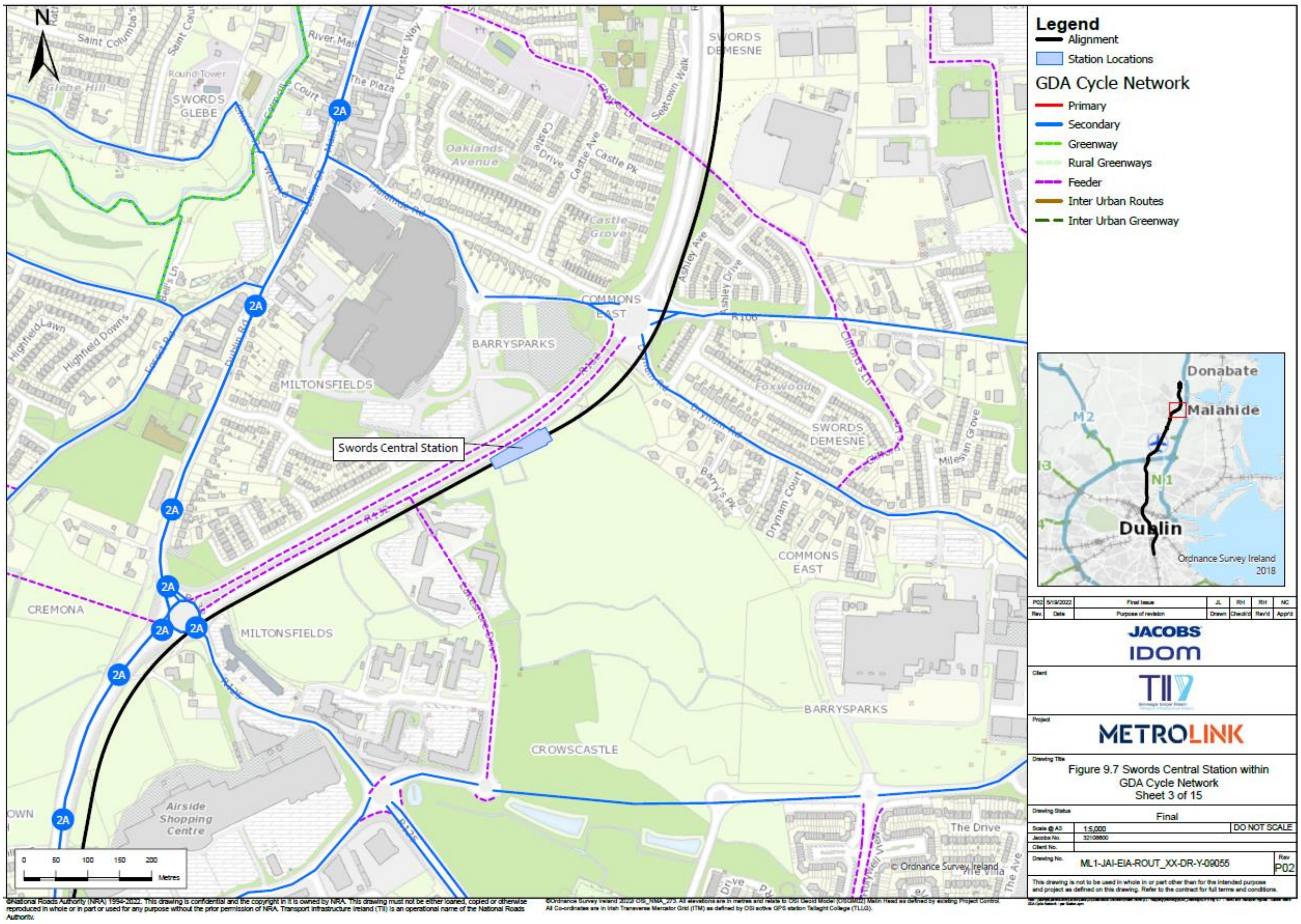


Figure 3.9: Swords Central Station within GDA Cycle Network

3.7.1 Baseline Accessibility Review

A baseline accessibility assessment has been undertaken to establish existing cycling provision relevant to the proposed Swords Central Station. Catchment maps prepared for the accessibility analysis for cycling are based on two criteria, the average speed for each mode and the existing road network. Therefore, maps do not reflect existing access restrictions for private roads and motorised roads.

Figure 3.10 illustrates a 5-minute cycling and 10-minute cycling catchment from the Swords Central Station and the location of existing bike racks and Dublin Bike stations in close proximity to the station. Table 3.7 below lists local amenities within this catchment.

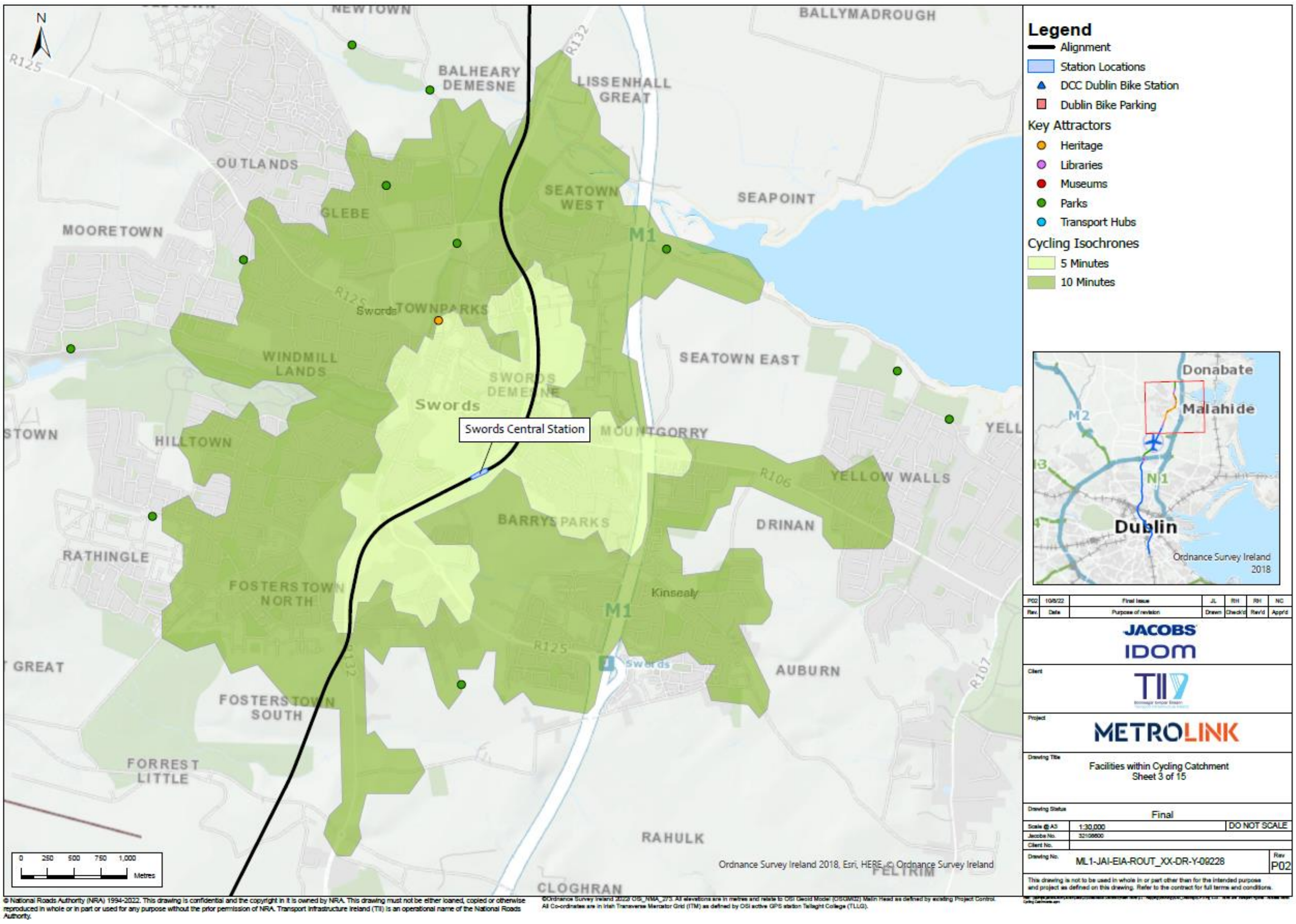


Figure 3.10: Swords Central Station Cycling Catchment Area

Table 3.7: Local facilities and amenities within cycling catchment area

Facilities within 5min cycling	Facilities within 10min cycling
Pavillions Shopping Centre	Holywell Commercial Centre
Swords Main Street	Airside Business Park
Fingal County Council	Boroimhe Residential Area
Swords Castle	St. Finian’s Catholic Chruch
Airside Retail park	Ward River Valley Park
North Dublin Corporate Park	Melrose Park
	Seabury
	Swords Business Park
	Fingallians GAA Club

3.8 Future Receiving Environment - Cycle Network

Improvements to the cycling network as part of the development of the Swords Western Distributor Road and the Barrysparks and Crowscastle Masterplan have been noted in section 3.6 Future Receiving Environment - Pedestrian Network.

As part of the R132 Connectivity Project, the change of the existing roundabouts to signalised junctions will improve connectivity across the R132 through the provision of designated cycle lanes and cycle crossings.

4. The Proposed Project – Swords Central Station

4.1 Site Location and Development Context

The proposed Swords Central Station is located to the east side of the R132 opposite the Pavilions Shopping Centre, approximately 250m south of Malahide Road roundabout and approximately 1km south of Seatown Station. Figure 4.1 below illustrates the location of the proposed development.

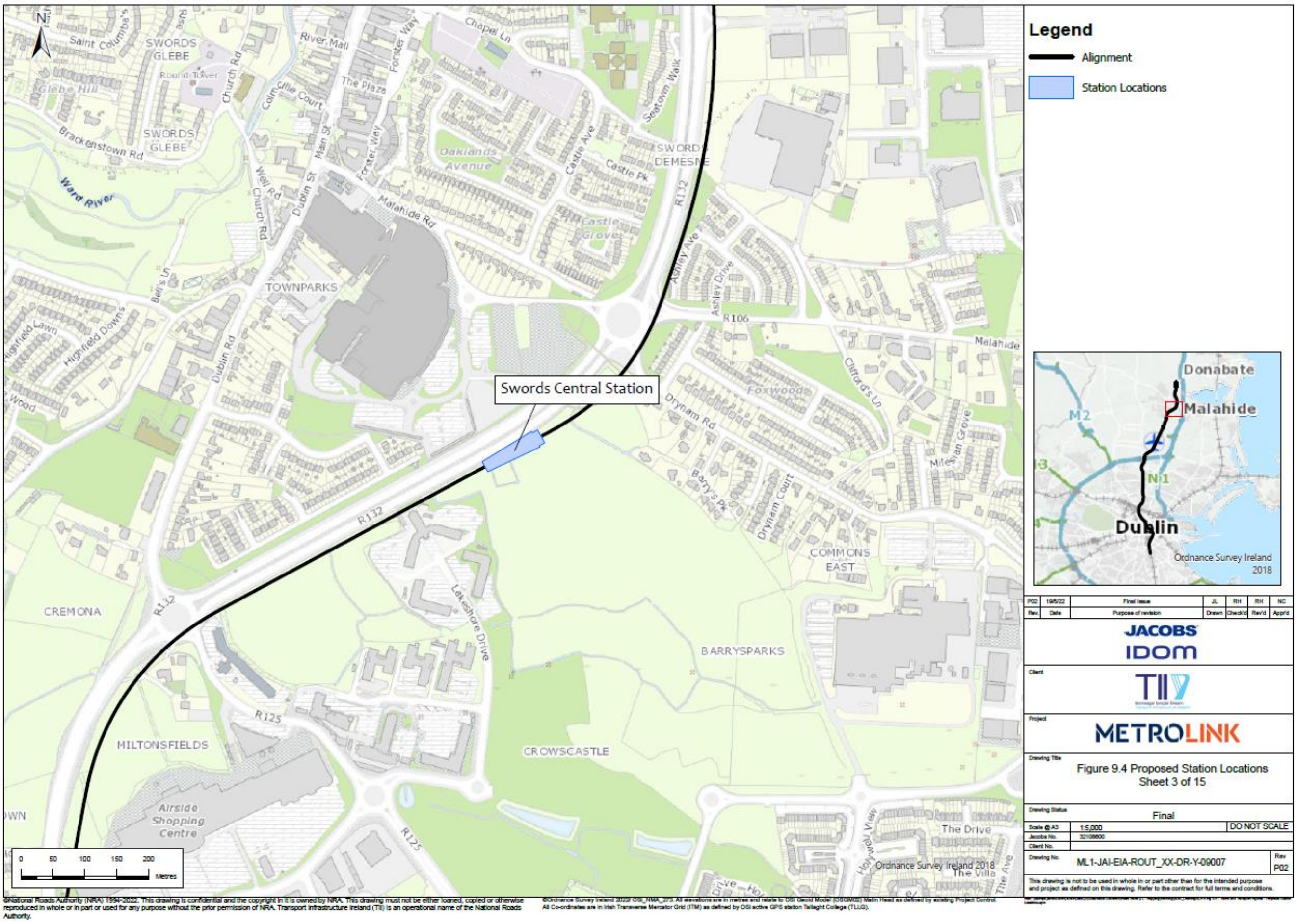


Figure 4.1: Proposed Site Location

Figure 4.2 illustrates the proposed layout for Swords Central Station including improvements to pedestrian crossings, location of entrances and exits, and bike parking areas. The station platforms can be accessed via two stair entrances to the north of the station, along with the provision of two passenger lifts. The existing bus stops on R132 are located in close proximity to the proposed pedestrian crossing north of the station entrances to facilitate safe interchange with the public transport network.

During the construction phase, the R132 pedestrian overbridge at this location will be removed, and will not be reinstated in the operational phase.

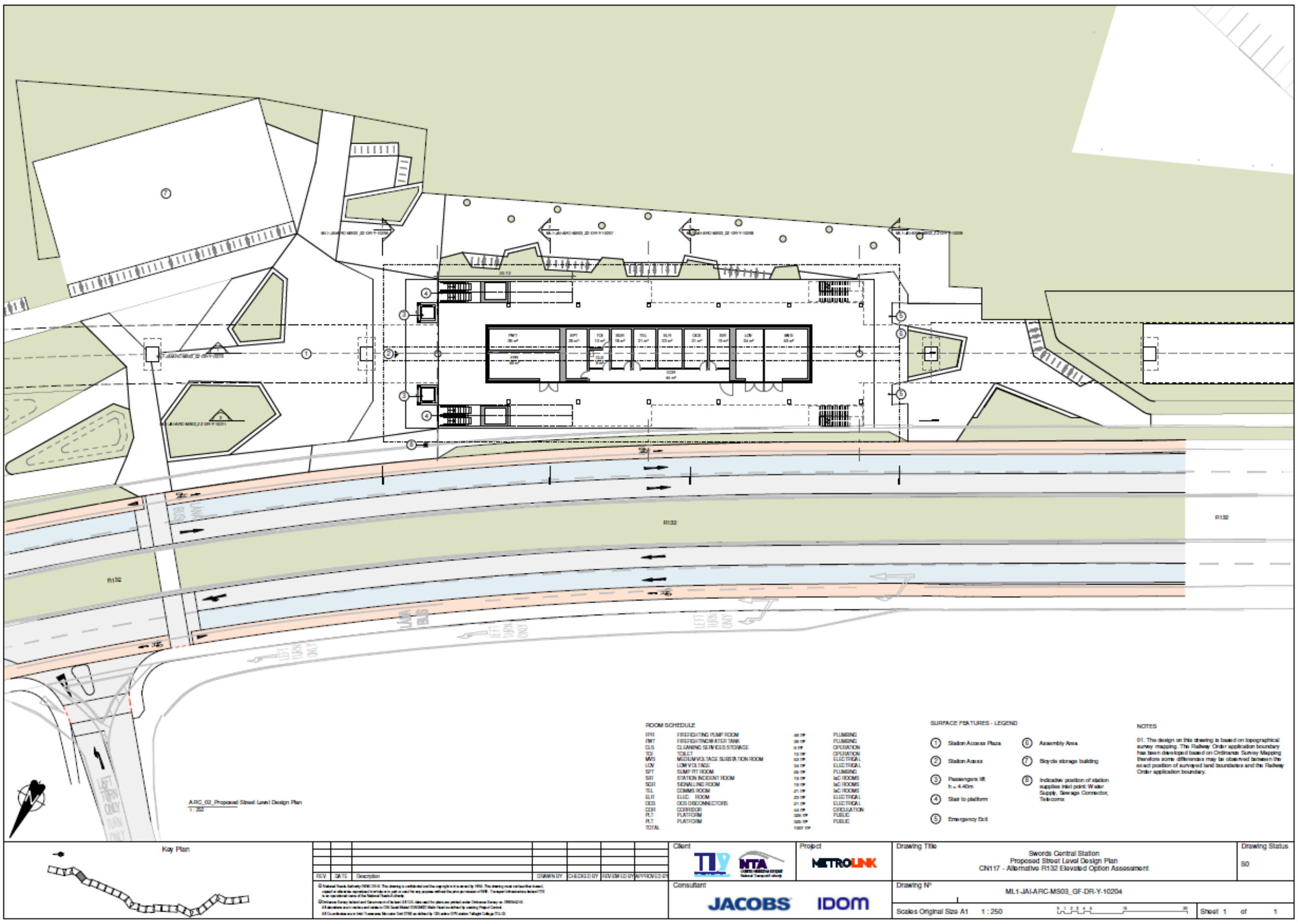


Figure 4.2: Swords Central Layout

5. Trip Generation/Trip Attraction

5.1 Operational Phase

Transport movements associated with the Swords Central Station operational phase have been established by utilising the National Transport Authority's (NTA) East Regional Model (ERM). The ERM provides a comprehensive representation of multi-modal travel patterns across the Greater Dublin Area and is a suitable tool for the testing and appraisal of the proposed Project.

5.1.1 Passenger Boarding and Alighting

Passenger demand modelling has been used to predict the numbers of passengers boarding and alighting at each station, and the resulting passenger load on the Project, for the years 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). The scenarios considered for assessment for each of the years 2035, 2050 and 2065 are outlined in Table 5.1.

Table 5.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project
Do Minimum Scenario	Committed transport schemes in the absence of the Project
Do Something - Scenario A	Scenario with the Project and committed transport schemes only
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for Opening year (2035) and planned schemes under the Transport Strategy for the GDA for the Design Year (2050) and the Forecast Year (2065)

5.1.1.1 Boarding and Alighting Volumes

Table 5.2 to Table 5.9 show boarding, alighting and interchange numbers for the Swords Central Station at different peak periods. All data has been retrieved from the ERM developed by the NTA. Data in this section was obtained for the busiest hour within each of the following peak periods:

- AM: busiest hour between 07:00 – 10:00;
- LT (lunch time): busiest hour between 10:00 – 13:00;
- SR (school run): busiest hour between 13:00 – 16:00; and,
- PM: busiest hour between 16:00 – 19:00.

Figure 5.1 presents the volume of boarding and alighting passengers at Swords Central Station over the 12hr peak period (07:00-19:00) in both Scenario A and Scenario B. Scenario A has the highest volume of both boarding and alighting passengers, reaching approximately 8,900 boarding passengers and over 9,500 alighting passengers in 2065, compared to approximately 8,500 boarding passengers and 8,200 alighting passengers in Scenario B.

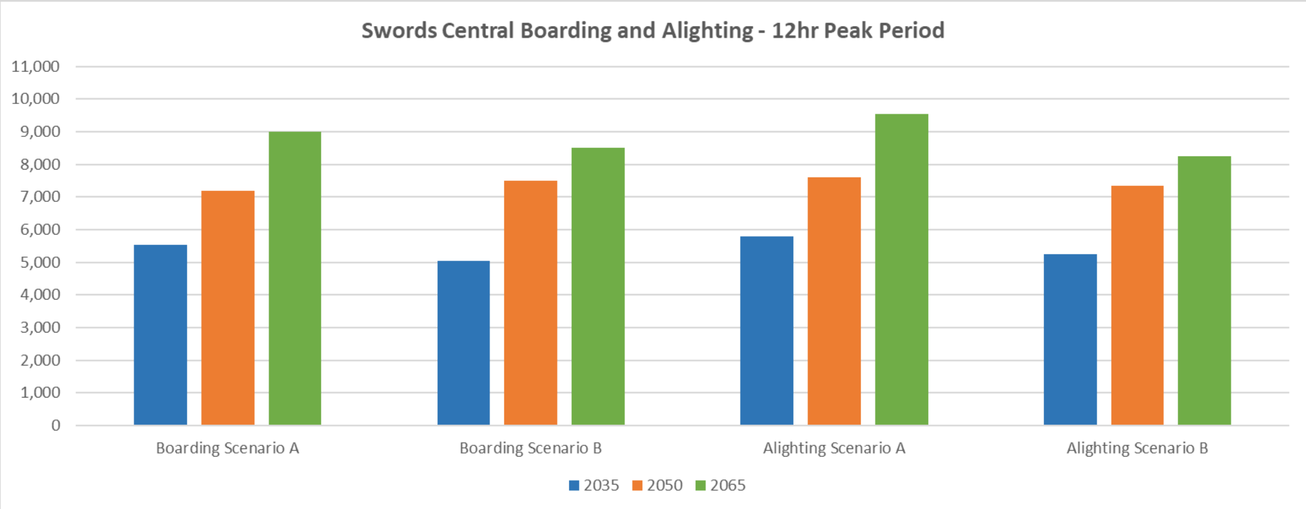


Figure 5.1: Swords Central 12hr Boarding and Alighting in Scenario A and Scenario B

5.1.1.2 Boarding and Alighting Volumes: Scenario A

Table 5.2 toTable 5.4 below highlight the boarding and alighting passenger numbers for Swords Central Station in Scenario A.

During the Opening Year 2035, it is expected that the highest number of boarding passengers will be 1,276 in the southbound direction during the AM peak. The highest number of passengers alighting at the Swords Central Station will be 1,074 during PM peak in the northbound direction.

Table 5.2: Boarding and Alighting Numbers at Swords Central Station in 2035 Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	21	310	526	24	267	591	36	411	983	144	1,074	2,460
Southbound	1,276	160	4,352	292	16	870	217	26	845	302	33	1,112

Source: East Regional Model (ERM)

For the year 2050, during the AM peak hour, 1,600 passengers are expected to board the MetroLink vehicles and head south, while 421 northbound passengers are expected to alight. During the PM peak hour, 400 passengers are expected to board the MetroLink vehicles and head south, with 1,352 northbound passengers alighting.

Table 5.3: Boarding and Alighting Numbers at Swords Central Station in 2050 Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	27	421	634	40	370	875	31	544	923	232	1,352	3,049
Southbound	1,600	220	4,721	386	45	1,474	282	25	816	400	47	1,413

Source: East Regional Model (ERM)

For the year 2065, during the AM peak hour, 1,890 passengers are expected to board the MetroLink vehicles and head south. 592 northbound passengers are expected to alight. During the PM peak hour, 562 passengers are expected to board and head south, while 1,649 northbound passengers will alight.

Table 5.4 : Boarding and Alighting Numbers at Swords Central Station in 2065 Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	36	592	773	28	471	661	16	680	868	315	1,649	3,755
Southbound	1,890	285	5,342	494	16	1,083	401	35	1,147	562	75	1,974

Source: East Regional Model (ERM)

5.1.1.3 Boarding and Alighting Volumes: Scenario B

Table 5.5 to Table 5.7 below highlight the boarding and alighting passenger numbers for Swords Central Station in Scenario B.

For the year 2035, during the AM peak, 1,162 passengers will board the MetroLink vehicles and head south, with 318 northbound passengers alighting. During the PM peak hour, 309 southbound passengers are expected to board while 944 northbound passengers will alight.

Table 5.5: Boarding and Alighting Numbers at Swords Central Station in 2035 Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	19	318	495	30	257	629	56	377	1,188	73	944	1,549
Southbound	1,162	109	3,640	253	31	1,030	206	21	789	309	20	879

Source: East Regional Model (ERM)

Table 5.6 shows the boarding and alighting passenger numbers for the 2050 year. During the AM peak hour, 1,584 passengers are expected to board the MetroLink vehicles at Swords Central Station and head south while 468 northbound passengers are expected to alight. During the PM peak hour, 453 passengers are expected to board and head south while 1,234 northbound passengers are expected to alight.

Table 5.6: Boarding and Alighting Numbers at Swords Central Station in 2050 Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	24	468	583	34	340	704	24	508	681	301	1,234	3,088
Southbound	1,584	210	4,456	398	69	1,556	307	38	921	453	57	1,559

Source: East Regional Model (ERM)

For the year 2065, during the AM peak, 2,072 passengers will board the MetroLink vehicles and head south, with 561 northbound passengers alighting. During the PM peak hour, 531 southbound passengers are expected to board while 1,445 northbound passengers will alight.

Table 5.7 : Boarding and Alighting Numbers at Swords Central Station in 2065 Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	32	561	690	45	461	874	59	620	1,314	36	1,445	1,697
Southbound	2,072	108	5,827	441	32	1,309	359	14	825	531	22	1,041

Source: East Regional Model (ERM)

5.1.1.4 Public Transport Interchange Volumes

As part of the Bus Network Redesign proposals, Swords Central Station will be serviced by Other City Bound route 21 along the R106, with Local routes L89 and 197, and peak-only route X84 serving the R132. Swords Main Street to the west of the proposed station will also be served by the A Spine to Dublin City Centre. More information on the future public transport network around the station can be found in Section 3.2 of this document.

The following tables present the volume of passengers transferring to and from the Project with other public transport modes in Scenario A and Scenario B, in both the AM and PM peak hours. The majority of passengers will originate from, or have final destinations in, the surrounding zones, with notable interchange with the bus network for alighting passengers in particular.

Table 5.8 : Transfers To/From Other Public Transport Modes in Scenario A

Scenario A									
Year	Peak	Boarding				Alighting			
		First Boarding	From Bus	From Rail/DART	From Luas	Final Stop	To Bus	To Rail/DART	To Luas
2035	AM	1,111	185	-	-	396	74	-	-
	PM	408	38	-	-	771	336	-	-
2050	AM	1,404	223	-	-	545	95	-	-
	PM	590	42	-	-	1,004	396	-	-
2065	AM	1,684	243	-	-	756	121	-	-
	PM	828	48	-	-	1,302	421	-	-

Source: East Regional Model (ERM)

Table 5.9 – Transfers To/From Other Public Transport Modes in Scenario B

Scenario B									
Year	Peak	Boarding				Alighting			
		First Boarding	From Bus	From Rail/DART	From Luas	Final Stop	To Bus	To Rail/DART	To Luas
2035	AM	1,024	157	-	-	350	77	-	-
	PM	344	38	-	-	683	281	-	-
2050	AM	1,433	175	-	-	562	116	-	-
	PM	697	57	-	-	938	354	-	-
2065	AM	1,730	374	-	-	537	132	-	-
	PM	516	52	-	-	1,098	369	-	-

Source: East Regional Model (ERM)

5.1.1.5 Distribution of Boarding and Alighting Passengers

Figure 5.2 and Figure 5.3 present the origins and destinations of passengers at Swords Central Station during the 2050 AM peak hour.

The main origins of passengers in the AM peak are the residential areas immediately surrounding the station. The modelling indicates that passengers will come from walking distances beyond 15 mins to the east and south east of the station. Passenger demand to the west is not indicated to span as far as the east, but will include existing residential areas such as River Valley.

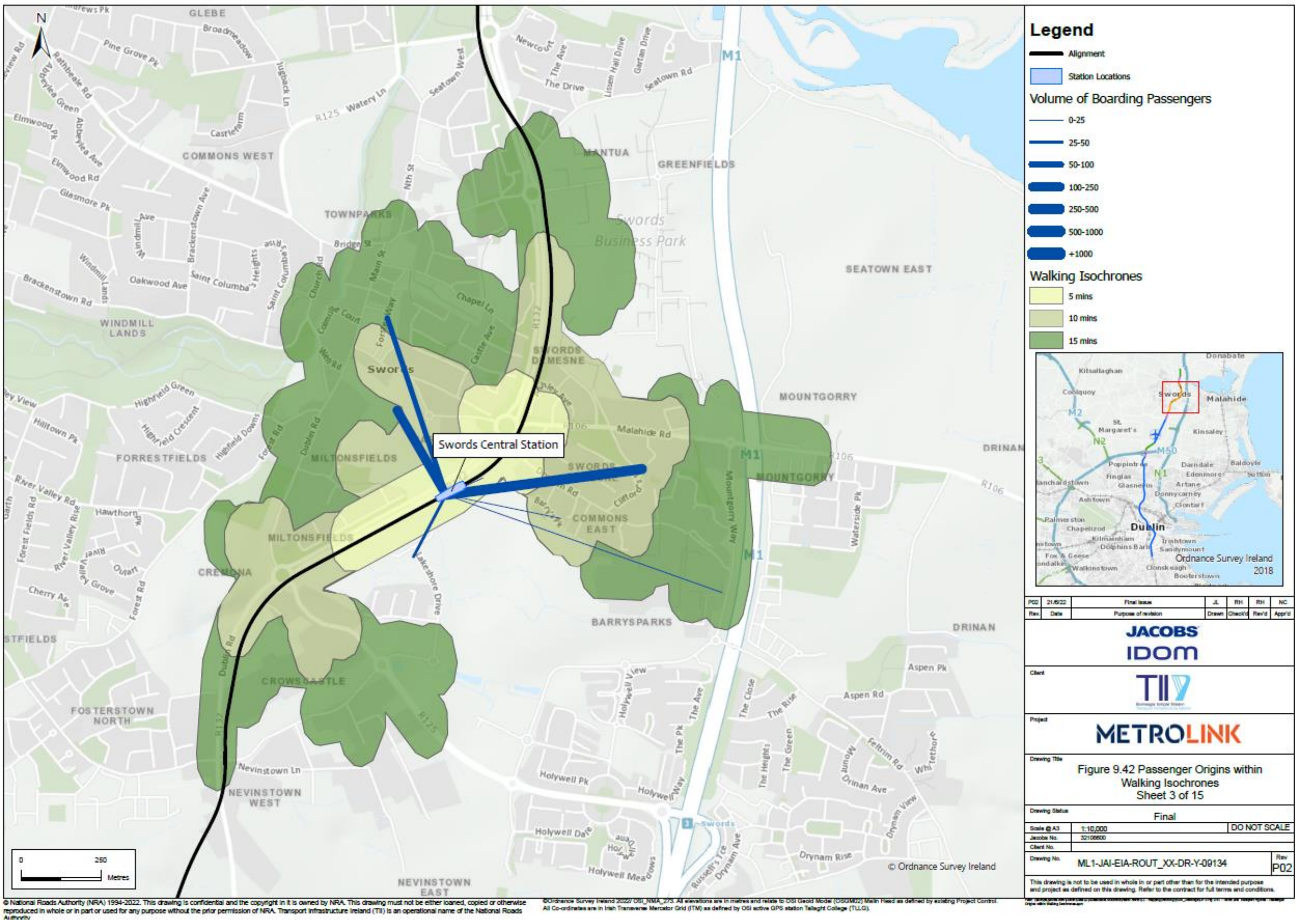


Figure 5.2: Origins of boarding passengers during AM peak hour and walking catchment areas

The main destinations for disembarking passengers in the AM peak are the Pavilions Shopping Centre and the Main St at the west of the station, along with the adjacent employment zones.

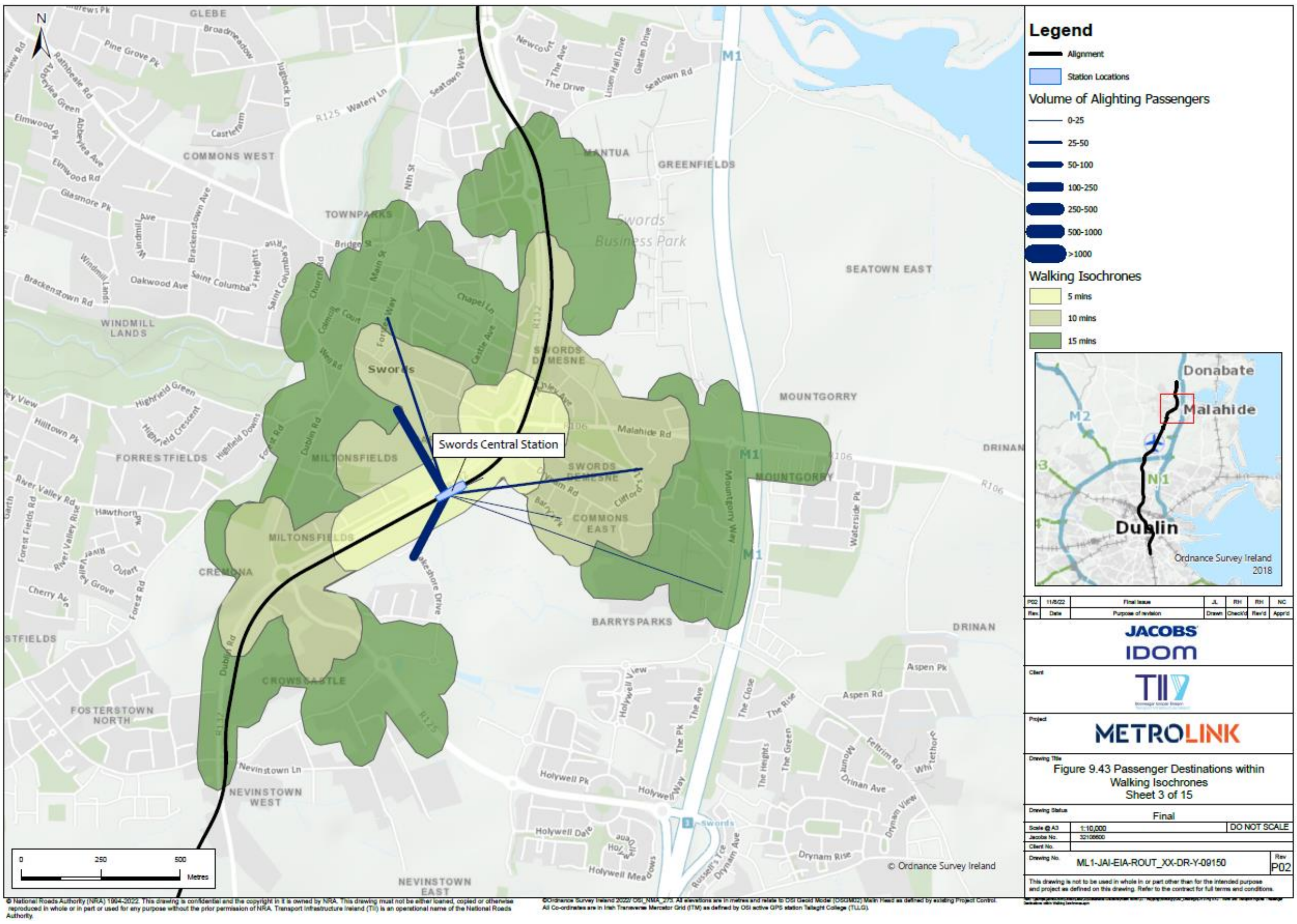


Figure 5.3: Destinations of boarding passengers during AM peak hour and walking catchment areas

6. Assessment of Impacts

6.1 Operational Phase

As part of the assessment of impacts associated with the Operational Phase of the Project, the impact of the proposed Swords Central Station will be examined on all modes of transport – public transport (PT), general traffic, walking and cycling.

6.1.1 Public Transport Assessment

The ERM model has been interrogated in order to estimate the reduction in private car trips associated with the origin and destination trips in the zones around the Swords Central Station. In Scenario A, there is a 16% increase in total trip demand between 2035 and 2050, with a further 14% increase from 2050 to 2065. Between the Do Minimum and Do Something scenarios, there is a 6 percentage point increase in PT mode share in 2035. In both 2050 and 2065, there is an increase of 7 percentage points in the PT mode share.

Private car mode share decreases by 2 percentage points in 2035, from 63% in the Do Minimum to 61% in the Do Something scenarios. In 2050 and 2065, private car mode share decreases by 4 percentage points and 3 percentage points, respectively.

The active modes mode share (which includes walking and cycling), reduces by 4 percentage points across 2035, by 3 percentage points in 2050, and by 4 percentage points in 2065. Whilst end-to-end active mode trips will reduce, there will be an increase in active mode trips to and from the station where passengers will interchange with the Project. Overall, there is a shift towards sustainable travel modes (active modes and PT combined), and a reduction in private car trip demand at Swords Central Station.

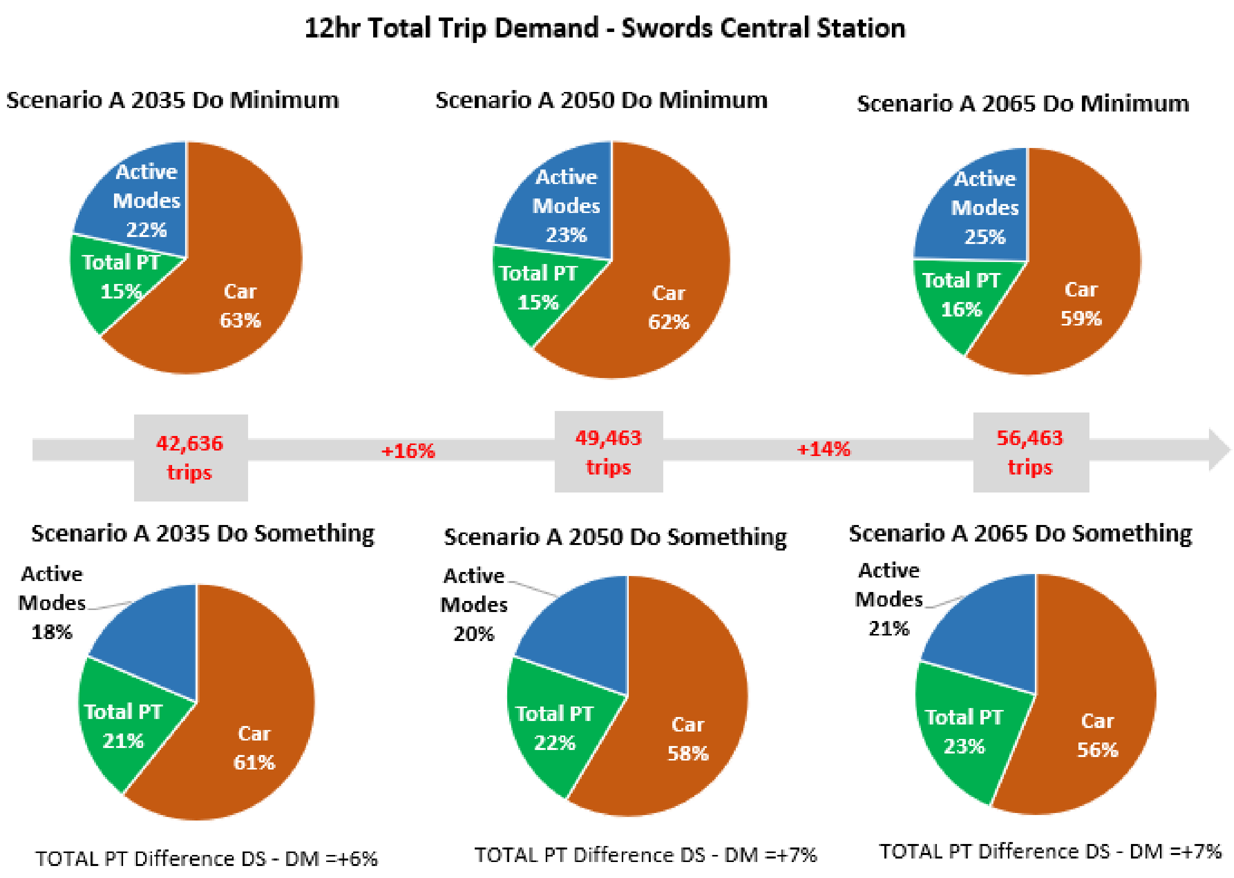


Figure 6.1: Swords Central Mode Share – Scenario A

In Scenario B, there is a 17% increase in total trip demand between 2035 and 2050, with a further 12% increase from 2050 to 2065. Between the Do Minimum and Do Something scenarios, there is a 6 percentage point increase in PT mode share in 2035. In 2050, there is an increase of 8 percentage points in the PT mode share and in 2060, there is an increase of 7 percentage points in the PT mode share.

Private car mode share decreased by 3 percentage points in 2035, from 64% in the Do Minimum to 61% in the Do Something scenarios. In 2050, private car mode share decreases by 4 percentage points and in 2065, private car mode share decreases by 3 percentage points.

The active modes mode share (which includes walking and cycling), reduces by 3 percentage points in 2035 and by 4 percentage points across 2050 and 2065. Whilst end-to-end active mode trips will reduce, there will be an increase in active mode trips to and from the station where passengers will interchange with the Project. Overall, there is a shift towards sustainable travel modes (active modes and PT combined), and a reduction in private car trip demand at Swords Central Station.

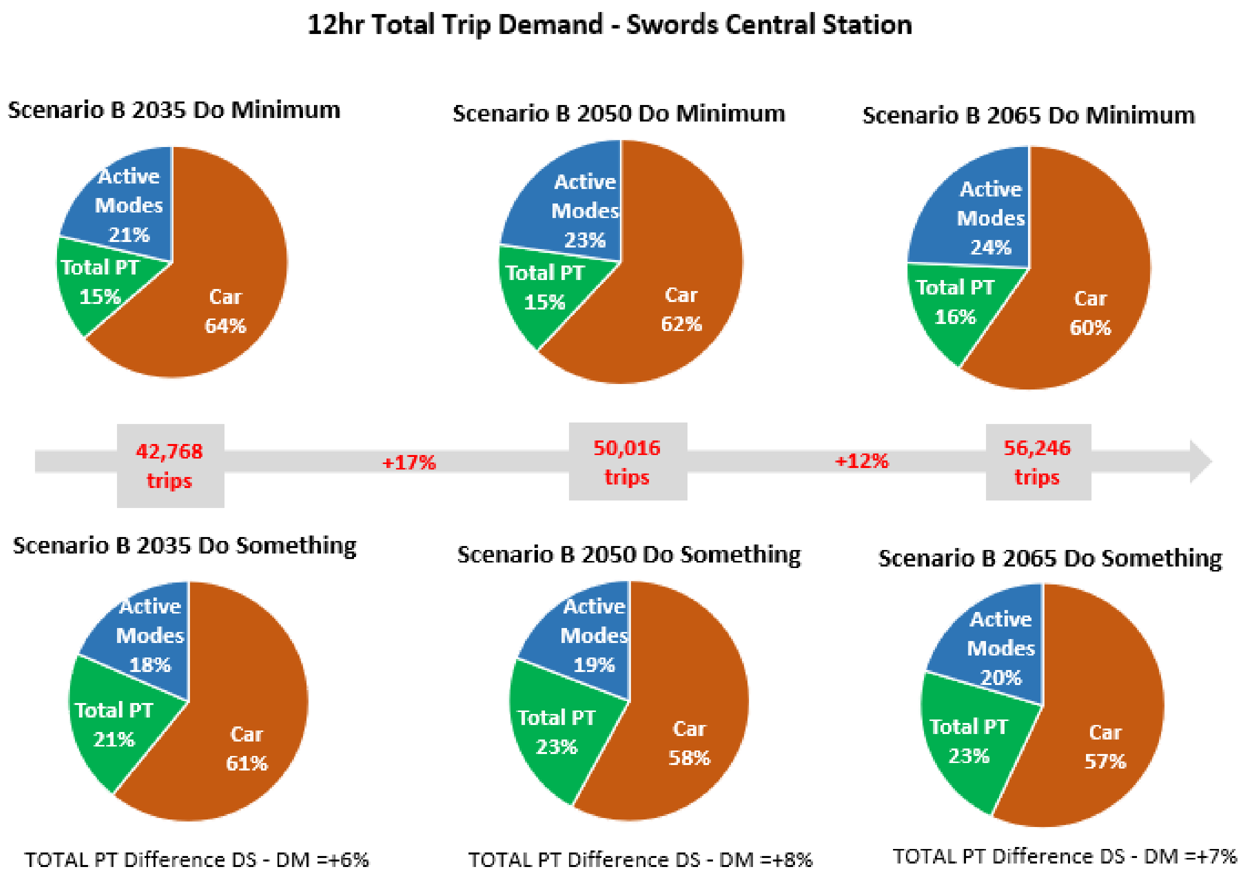


Figure 6.2: Swords Central Mode Share – Scenario B

Figure 6.3 presents the changes in PT mode share between the Do Minimum and Do Something scenarios in Scenario A 2065, with Figure 6.4 presenting the same for Scenario B 2065. In the 2035 AM period, the zones to the east of the station see increases in PT (including the proposed Project) mode share of up to 10 percentage points, with zones to the west of the station also seeing increases of up to 10 percentage points. In the 2050 and 2065 period, an increased number of zones to the west see an increase of up to 10 percentage points in mode share for PT (including the proposed Project), with a zone located immediately to the east in 2050 and east and west in 2065 see an increase of up to 20 percentage points, when the proposed Project is in place. Zones further east from the station beyond the alignment also see an increase of up to 10 percentage points in mode share.

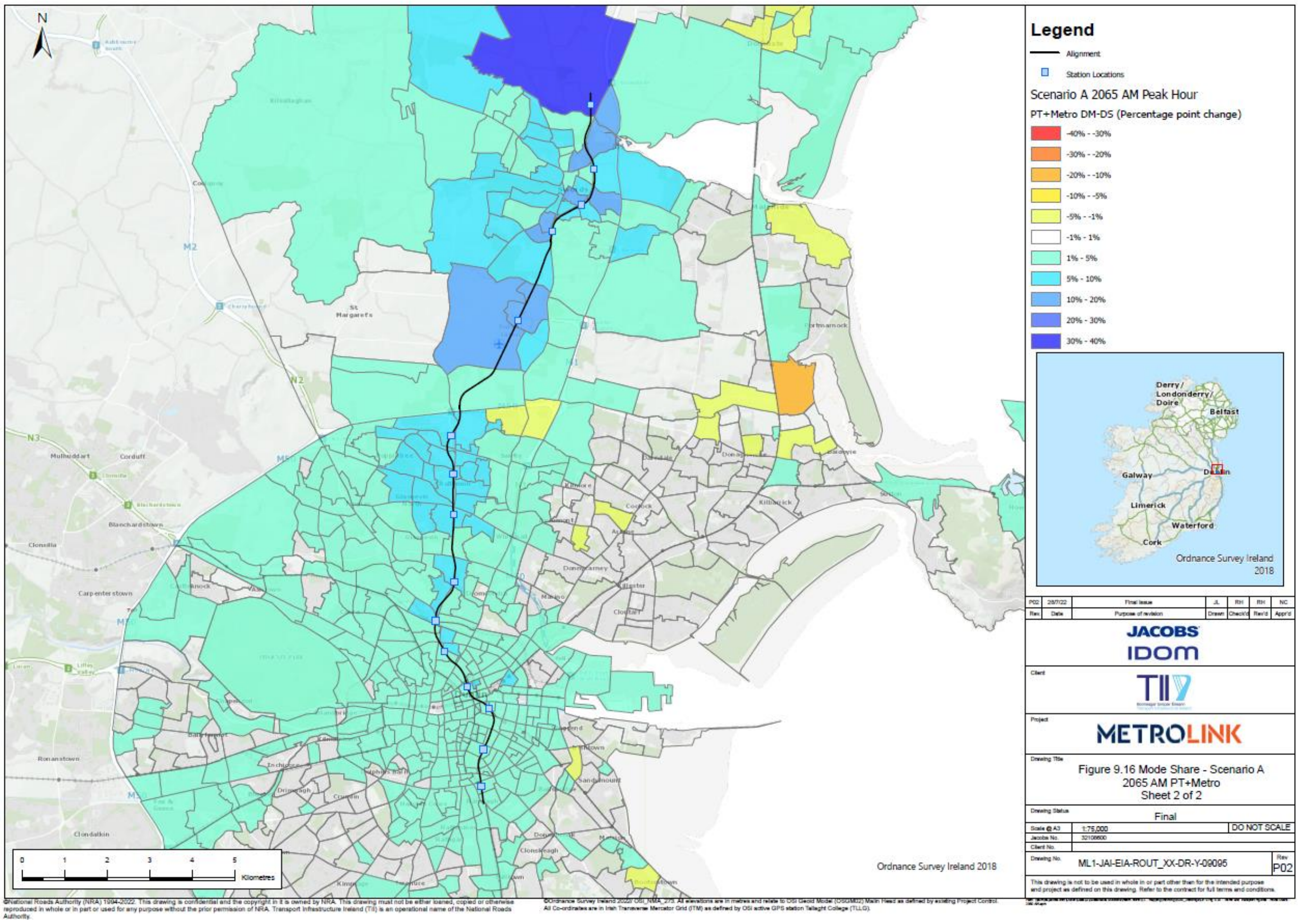


Figure 6.3: Changes in Public Transport Mode Share (Including the Projetc) in Scenario A 2065 AM Peak Hour

In Scenario B, in the 2035 AM period, the zones to the east of the station see increases in PT (including the proposed Project) mode share of up to 10 percentage points, with zones to the west of the station also seeing increases of up to 10 percentage points. In the 2050 and 2065 period, an increased number of zones to the west see an increase of up to 10 percentage points in mode share for PT (including the proposed Project) when the proposed Project is in place. Zones further east from the station beyond the alignment also see an increase of up to 10 percentage points in mode share. The zone to the immediate east of the station sees and increase of up to 20 percentage points in 2050 and 2065.

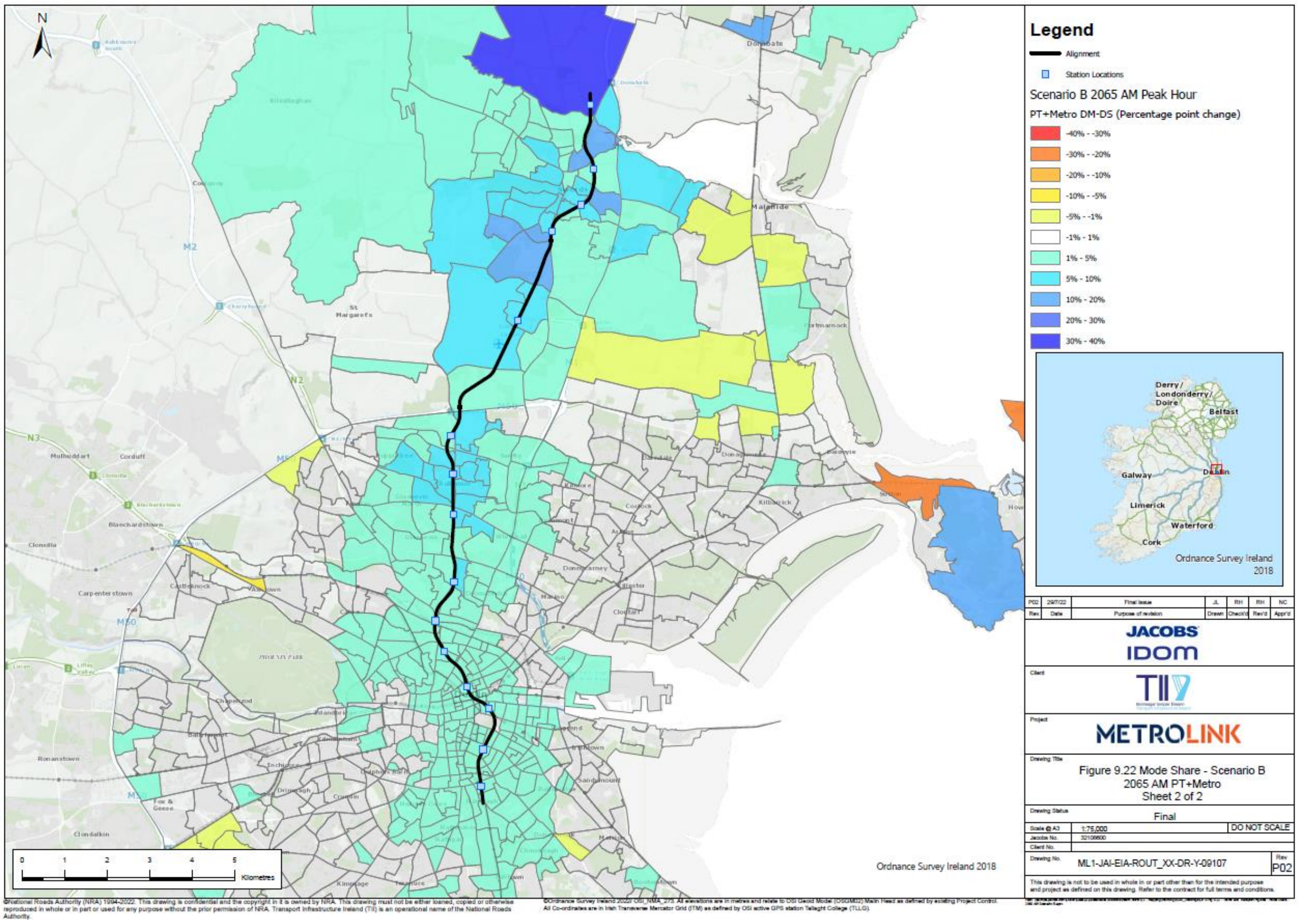


Figure 6.4: Changes in Public Transport Mode Share (Including the Project) in Scenario B 2065 AM Peak Hour

In Scenario A, the following changes to journey times are observed:

- The most significant journey time savings from the Swords Pavilions area would be to the Glasnevin area, of approximately 50 minutes in the 2035, 2050 and 2065 AM periods. This is a reduction of over 60% compared to the Do Minimum scenario.
- Public transport journeys from the Swords Pavilions area to other areas in north Dublin, such as the Blanchardstown area, will see savings of approximately 31 minutes in the 2035 AM period and rising to 34 minutes in the 2065 AM period; and to Dublin Airport, savings of approximately 16 minutes in the 2035, 2050 and 2065 AM periods, which is a reduction of approximately 50% compared to the Do Minimum scenario.
- Public transport journeys from the Swords Pavilions area to key Dublin City Centre locations such as O'Connell Street and St Stephen's Green will see savings of between 20 and 24 minutes in the 2035, 2050 and 2065 AM periods when the proposed Project is in place.
- Public transport journeys from the Swords Pavilions area to areas in south Dublin, such as Sandyford, will see savings of approximately 30 minutes in the 2035, 2050 and 2065 AM periods.

In Scenario B, the following changes to journey times are observed:

- The most significant journey time savings from the Swords Pavilions area would be to the Glasnevin area, of approximately 28 minutes in the 2035 AM period, and 42 minutes in the 2065 AM period. This is a reduction of nearly 50% in 2035 and nearly 60% in 2065 compared to the Do Minimum scenarios.

- Public transport journeys from the Swords Pavilions area to other areas in north Dublin, such as the Blanchardstown area, will see savings of approximately 26 minutes in the 2035 AM period and rising to 35 minutes in the 2065 AM period; and to the Airport area, savings of approximately 10 minutes in the 2035, 2050 and 2065 AM periods, which is a reduction of approximately 40% compared to the Do Minimum scenario.

- Public transport journeys from the Swords Pavilions area to key Dublin City Centre locations such as O'Connell Street and St Stephen's Green will see savings of between 21 and 30 minutes in the 2035, 2050 and 2065 AM periods when the proposed Project is in place.

- Public transport journeys from the Swords Pavilions area to areas in south Dublin, such as Sandyford, will see savings of approximately 27 to 32 minutes in the 2035, 2050 and 2065 AM periods.

6.1.2 Traffic Impact Assessment

The future street level layout at Swords Central Station provides for a pedestrian crossing on the R132 to the north of the station, which will have a slight negative impact on the road network, as some vehicles will experience a delay when pedestrians are crossings, however the crossing will operate within capacity and such delays are common within an urban street environment.

In the Scenario A 2035, 2050 and 2065 AM periods, the zones immediately to the east of the station see a reduction in private care mode share of up to 10 percentage points with zones to the west of the station seeing private car mode share decrease by up to 10 percentage points when the proposed Project is in place.

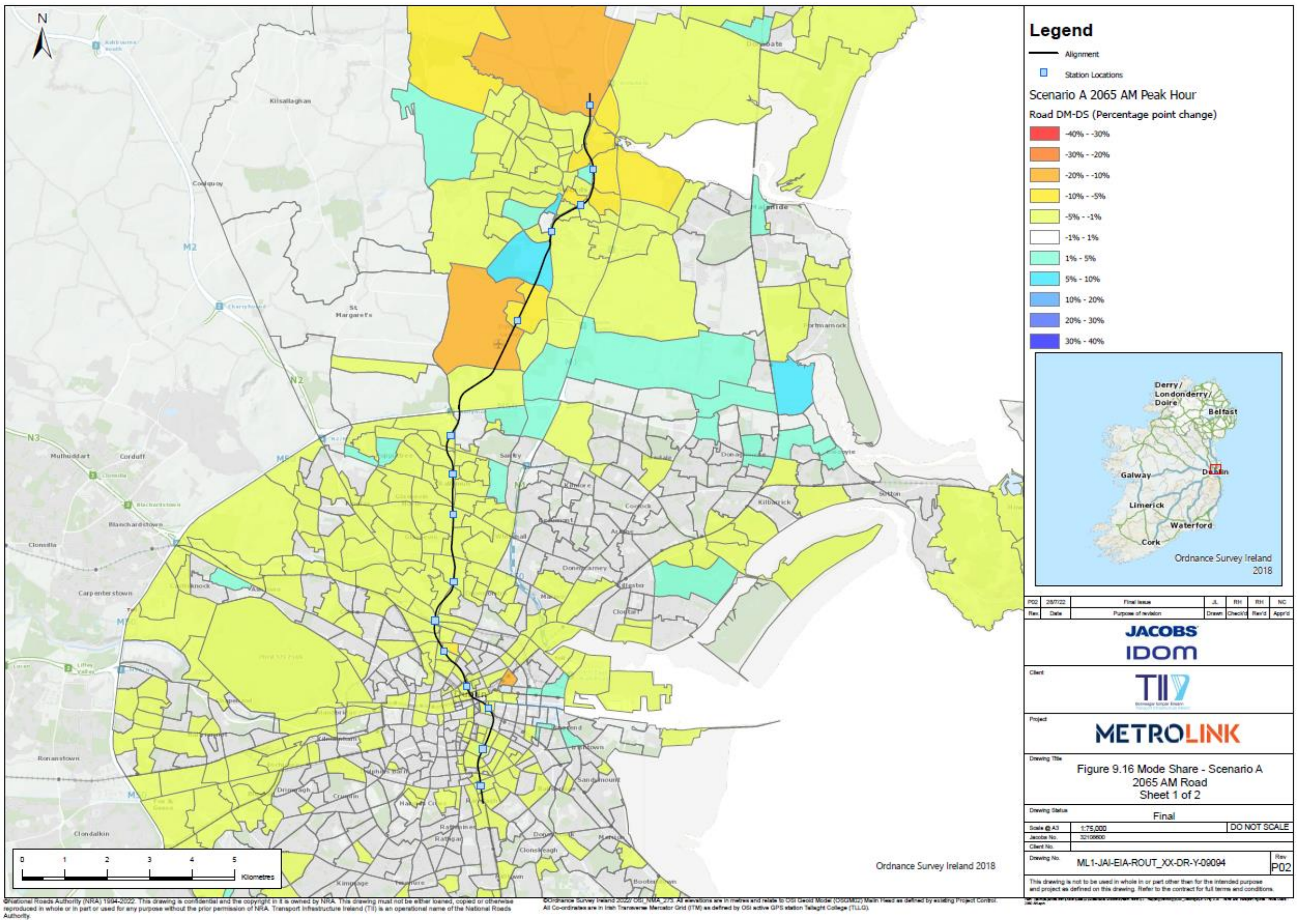


Figure 6.5: Change in Car Mode Share in Scenario A 2065 AM Peak Hour

In the Scenario B 2035, 2050 and 2065 AM periods, the zones immediately to the east of the station see a reduction in private care mode share of up to 10 percentage points with zones to the west of the station seeing private car mode share decrease by up to 5 percentage points when the proposed Project is in place in 2035, seeing a further reduction of up to 10 percentage points in 2050 and 2065.

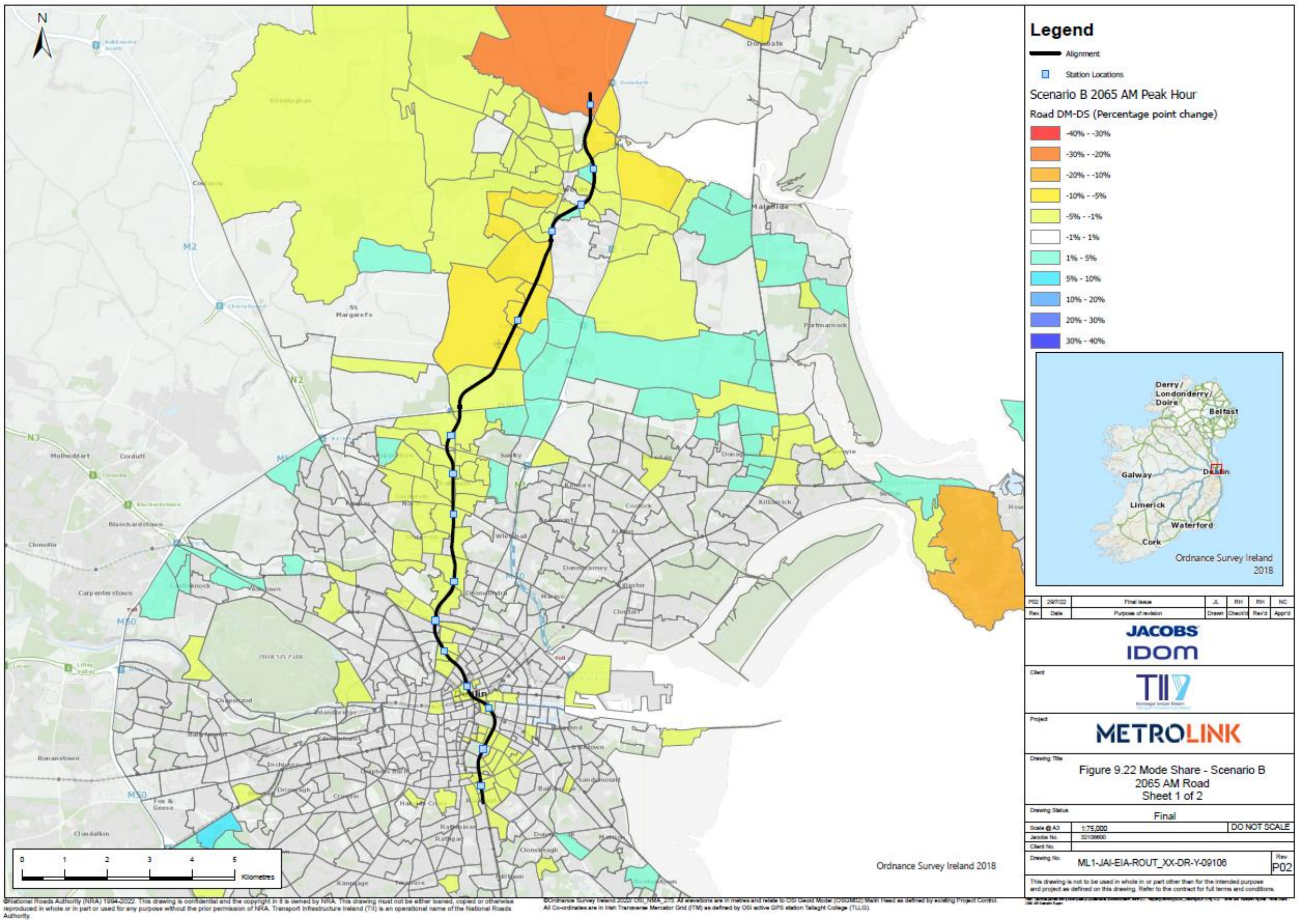


Figure 6.6: Changes in Car Mode Share in Scenario B 2065 AM Peak Hour

Over the 12hr period, the zones within a 2km radius of Swords Central Station see a reduction of over 200 car trips between the Scenario A 2035 Do Minimum and Do Something scenarios, reaching a reduction of over 590 trips in Scenario A 2050. In 2065, there is a reduction of 600 car trips between the Do Minimum and Do Something scenarios. In Scenario B, these zones see a reduction of over 300 car trips between the 2035 Do Minimum and Do Something scenarios, increasing to a reduction of 700 car trips in 2050, however 2065 sees a reduction of 600 car trips between the Do Minimum and Do Something scenarios over the 12hr period.

6.1.3 Pedestrian Impact Assessment

An assessment of the pedestrian provision around the station has been undertaken, in order to confirm its robustness in catering for the additional demand associated with the proposed Project. The pedestrian assessment has considered the impact on the proposed footpath widths at Swords, however the maps only reflect the existing provisions. The assessment comprises of a ‘Footway Comfort Assessment’, which predicts the pedestrian comfort levels based on industry guidance, taking cognisance of factors including pedestrian demand and footway width. Furthermore, an additional assessment has been undertaken in order to determine the adequacy of pedestrian crossing provisions in catering for predicted station demand.

6.1.3.1 Pedestrian Footway Comfort Assessment

The future street level layout at Swords Central Station provides for new footway provisions along the R132, approximately 3.6m wide at the narrowest section at the station entrance. On the western side of the R132, footway provisions are approximately 2m wide. A pedestrian crossing will be provided to the east of the station on the R132, to facilitate safe crossing between the station and Swords Pavillions.

A pedestrian comfort assessment has been undertaken on the proposed footpath widths at Swords Central Station, to assess if the provisions will be comfortable for the anticipated demand. The Scenario A 2050 design year was assessed, with Scenario A 2065 also assessed as the 'worst-case scenario' for passenger numbers, as this scenario has the highest volume of total AM passenger demand in the future year between both Scenario A and Scenario B (almost 61,000 AM boarding passengers across the alignment in Scenario A, compared to almost 55,000 AM boarding passengers in Scenario B). At all stations, the passenger demand in the AM peak hour is lower in Scenario B than in Scenario A, with the exception of Fosterstown Station where there is a 12% increase in Scenario B. As such, Scenario B has not been assessed, with the exception of Fosterstown Station to ensure that all possible significant impacts are accounted for. The full methodology adopted is detailed in the Overall Project TTA.

As the pedestrian infrastructure surrounding Swords Central station is limited in the baseline scenario, no baseline assessment was undertaken. However, with the implementation of the Project and R132 Connectivity Study, improvements will be made to the network, facilitating pedestrian movements to and from the station.

As the station lies within Fingal County Council, the guidance of Dublin City Council does not apply, however TfL Pedestrian Comfort Level assessments have been carried out. The 2050 assessment finds that all footway provisions around Swords station are sufficient to accommodate future pedestrian demand, with the exception of the R125 footway which is deemed as 'Uncomfortable' due to it's restricted width of 1m, present eastbound only. Drynam Road is considered to have an 'acceptable' pedestrian comfort level. The same results can be seen in 2065, shown in Figure 6.8. To improve the comfort level on the R125 the grass verges could be reallocated to allow for increased footway width. In both scenarios, sections of the R132 will have an 'Acceptable' comfort level due to the high passenger demand at this station, however overall the R132 is deemed 'Comfortable'.

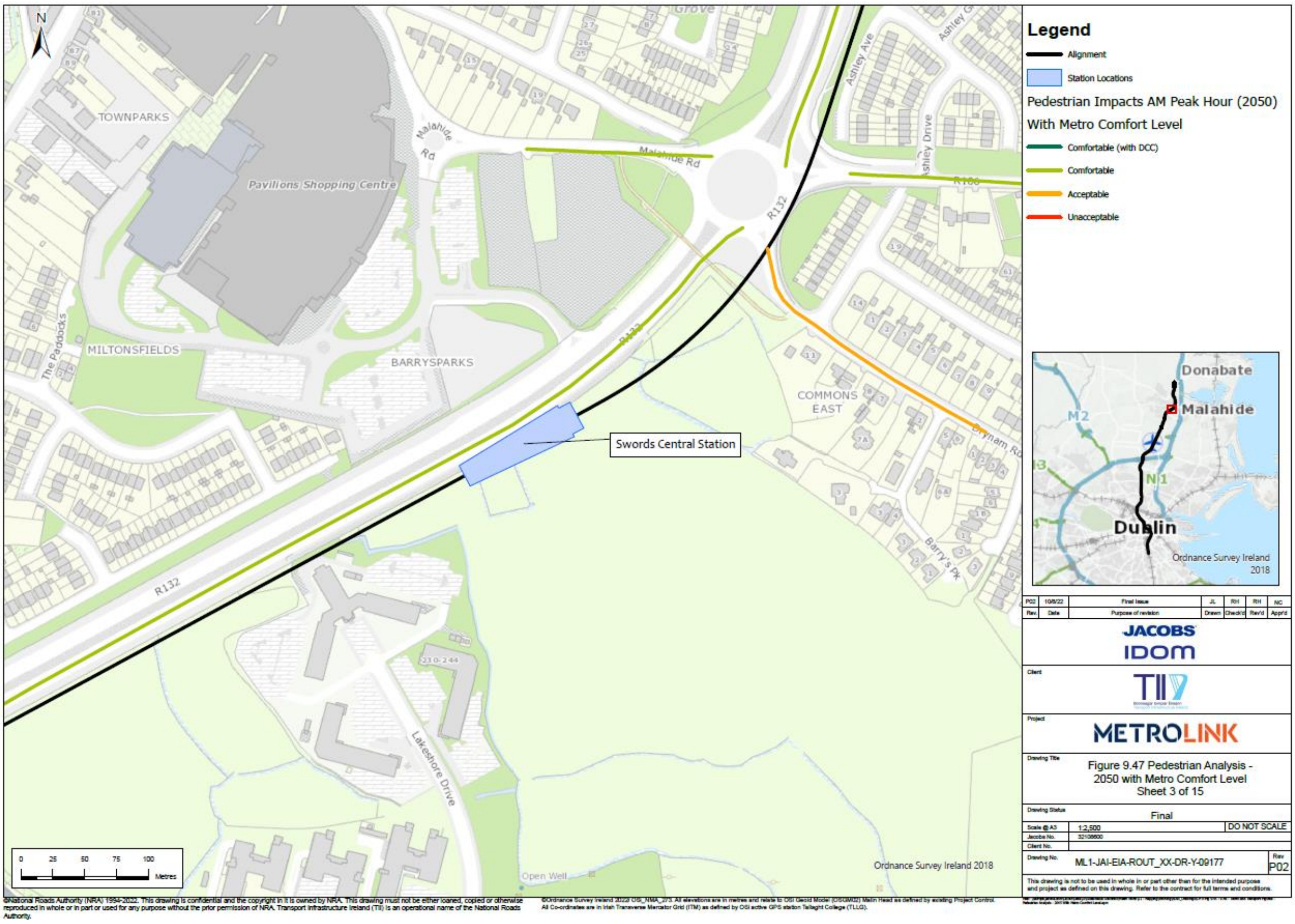


Figure 6.7: Pedestrian Comfort Assessment with The Project 2050

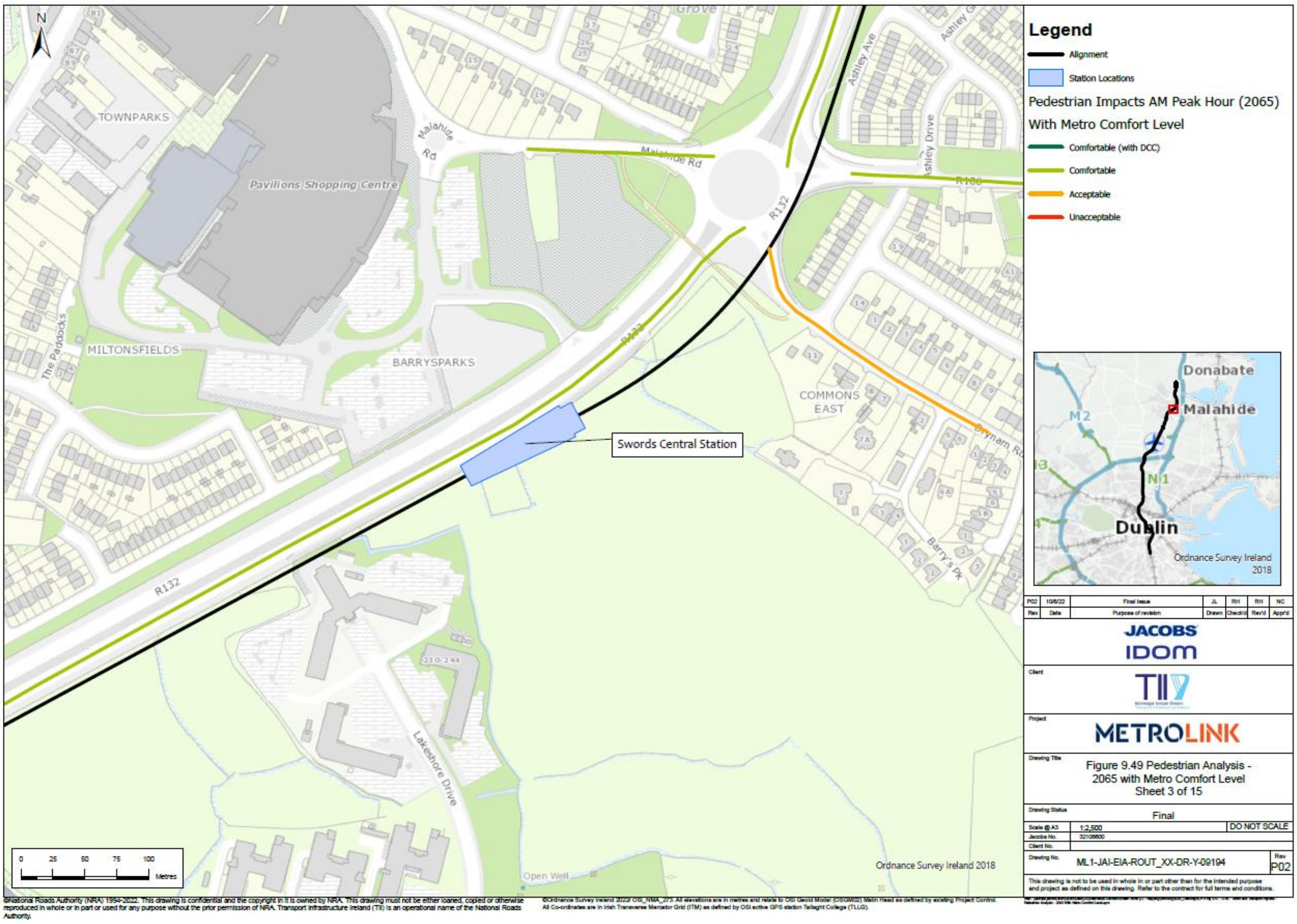


Figure 6.8: Pedestrian Comfort Assessment with the Project 2065

6.1.4 Cycling Impact Assessment

The future street level layout at Swords Central Station provides for a 2m one-way cycle lane in each direction on the R132, with a Level B Quality of Service. A crossing facility will be provided to facilitate safe crossing between the station and Swords Pavilions. Currently there are limited to no cycle facilities along the R132 so the Project results in a positive impact.

A methodology has been applied to determine the potential demand for cycle parking at each of the stations. This methodology utilises the number of boarding and alighting passengers, the distance of origins/destinations from the station, and the location of the station. The passenger demand from an earlier Opening Year has been utilised to determine the potential cycle demand in the Opening Year, and in the Opening Year +5 Years.

This approach has informed the design and the number of cycle parking spaces provided at each station. Other factors such as the availability of land, potential future land uses and parking supply, and the location of the station have also been taken into consideration by the design team in determining the quantum of cycle parking spaces provided.

For the Swords Central Station, a total of 942 cycle spaces are proposed.

6.1.5 Road safety

A Stage 1 Road Safety Audit has been undertaken for all of the proposed highway works for the Project. This is under a separate cover.

7. Summary

The Swords Central Station will facilitate 11,200 passenger movements over the 12hr peak period (07:00-19:00) in Scenario A in 2035, rising to over 14,700 in 2050, and approximately 18,500 in 2065.

The main catcment origins and destinations of the people boarding and alighting at the Swords Central Station will be:

- Origins from residential areas to east of M1;
- Origins from Holywell residential area;
- Destinations at Swords Pavillions Shopping Centre; and
- Destinations at Swords Main Street.

During the operational phase of Swords Central Station, there will be an increase of up to 10 percentage points in public transport mode share in zones to the east of the station. There will be a reduction of up to 10 percentage points in private car mode share in zones to the east of the station when the proposed Project is in place, resulting in a total reduction of over 600 road trips from the zones surrounding Swords Central Station over the 12hr period in both Scenario A 2065 and Scenario B 2065.

The Project will result in public transport journey time savings of approximately 50 minutes from Swords Pavillions to Glasnevin, in Scenario A and B. There will be public transport journey time savings of up to 30 minutes between Swords Pavillions and Dublin City Centre locations, such as O'Connell Street and St. Stephen's Green.

The Project will provide for new signalised at grade pedestrian crossings on the R132 Malahide Road Roundabout and will reinstate the junction layout at Malahide Roundabout developed as part of the R132 Connectivity Project.

The station will also provide for 942 cycle parking spaces. The pedestrian comfort assessment indicates that in both 2050 and 2065 the provisions around Swords Central Station will be sufficient to accommodate future demand, with the exception of the R125 which is deemed 'Uncomfortable'. This could be improved through the reallocation of space to increase footway width.

In overall terms, the Swords Central Station will provide for improvements to the public transport network resulting in decreases in private car usage/trips, increases in public transport usage/trips and will facilitate walking and cycling to the station, without significantly impacting on the operation of the road network in the area.

Appendix A. Traffic Flow Diagrams

Base Flows

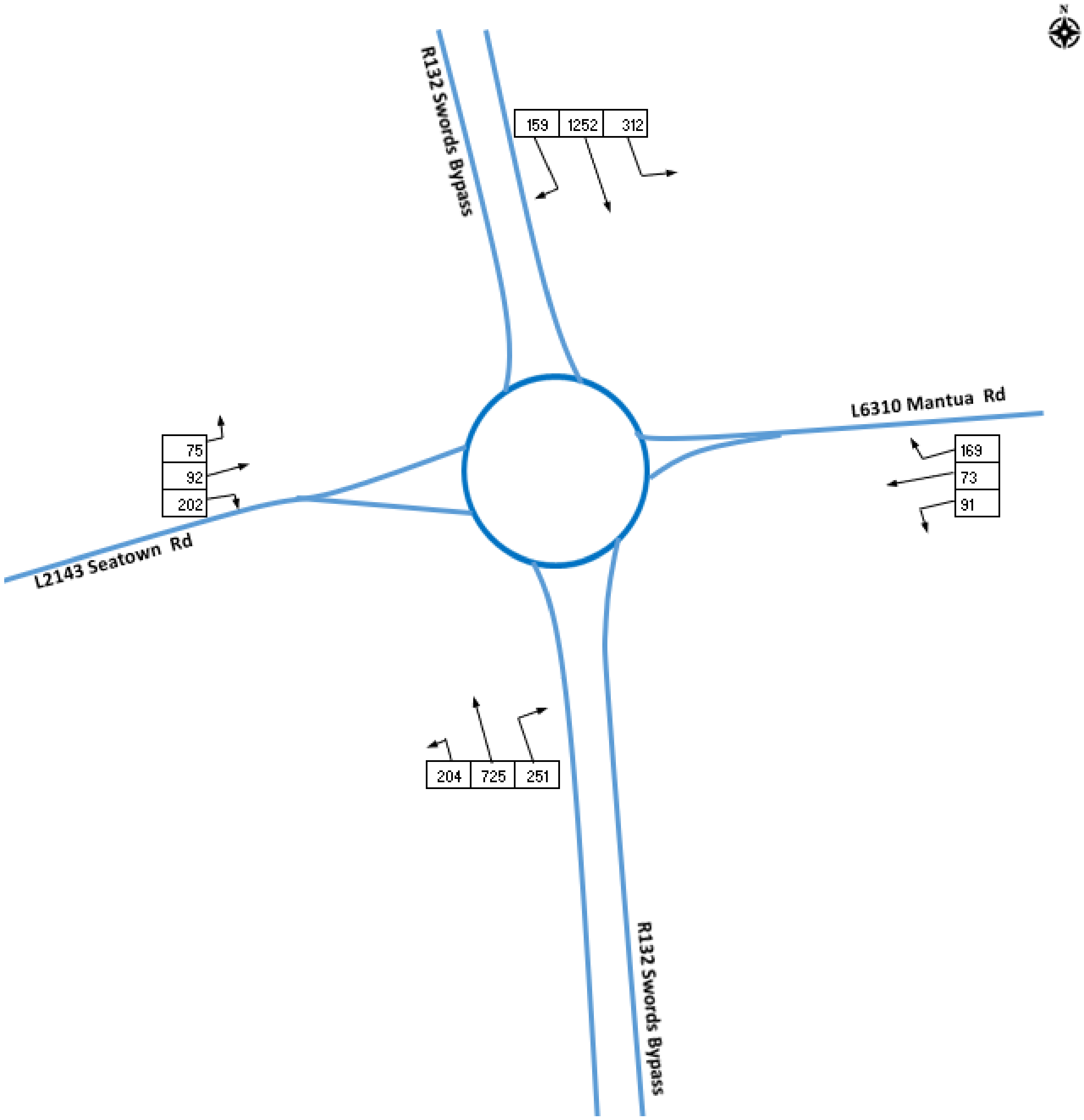


Figure 7.1: Seatown Rd Roundabout - AM 2018 Baseline Flows

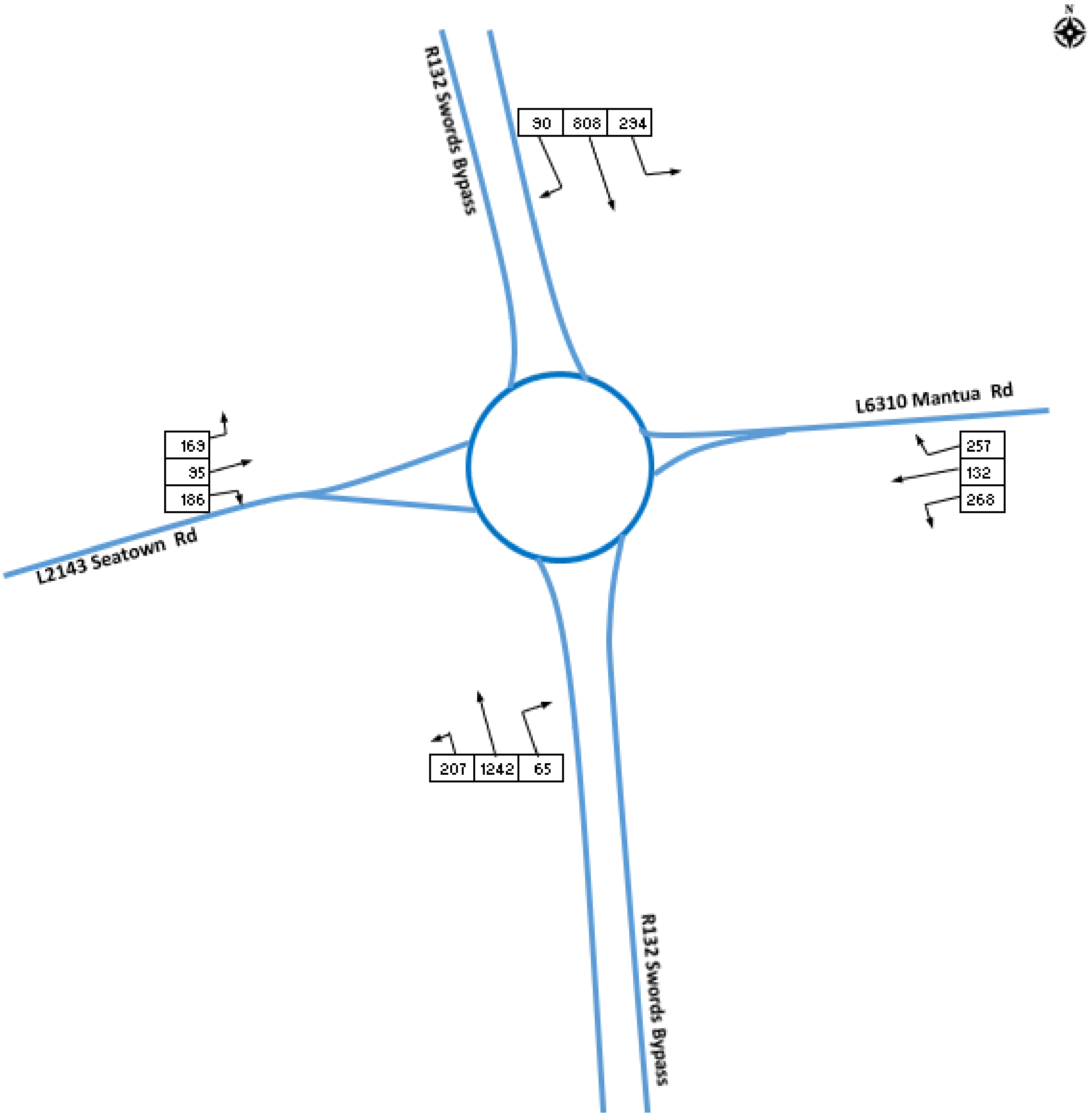


Figure 7.2: Seatown Rd Roundabout - PM 2018 Baseline Flows

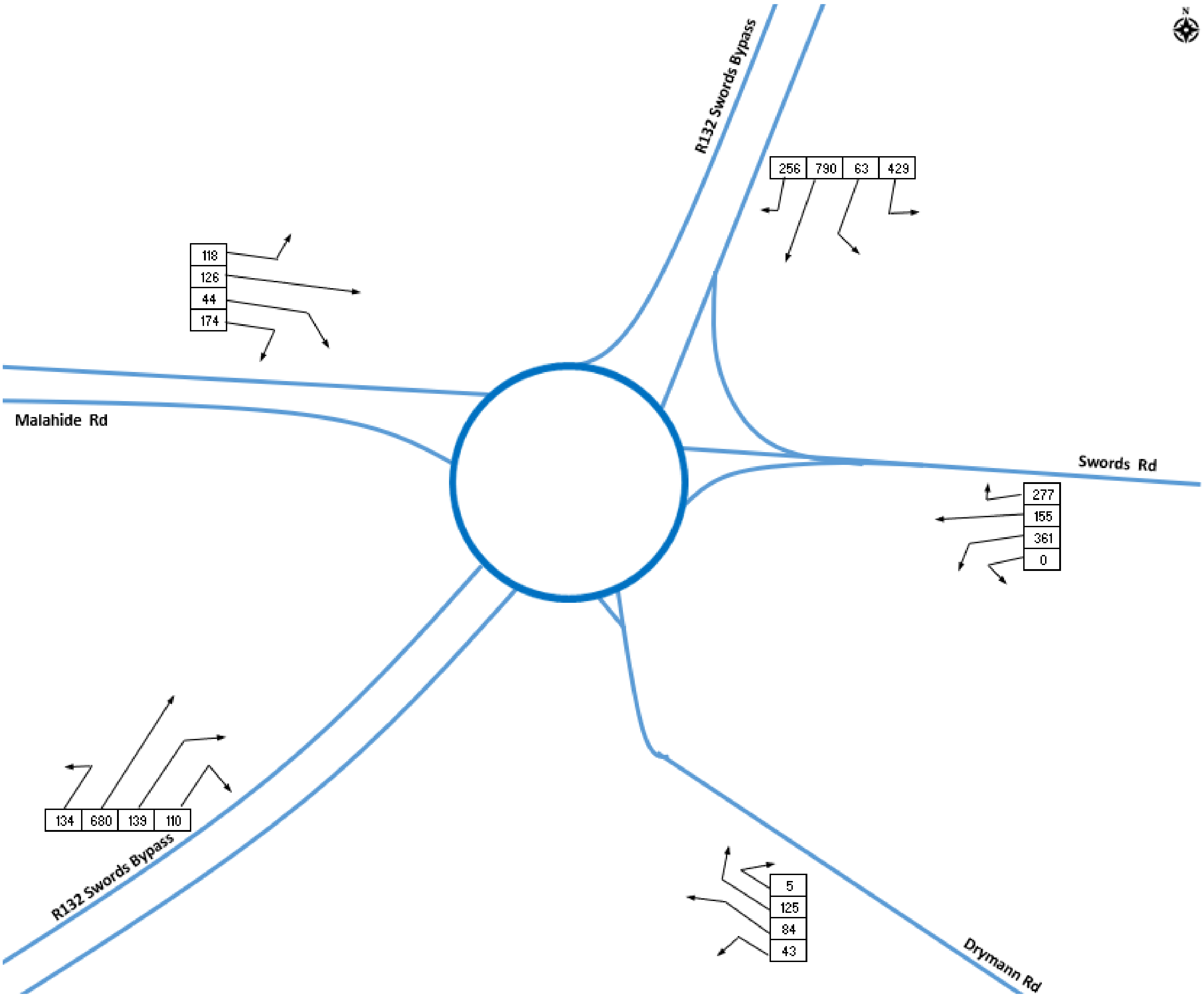


Figure 7.3: Malahide Rd Roundabout - AM 2018 Baseline Flows

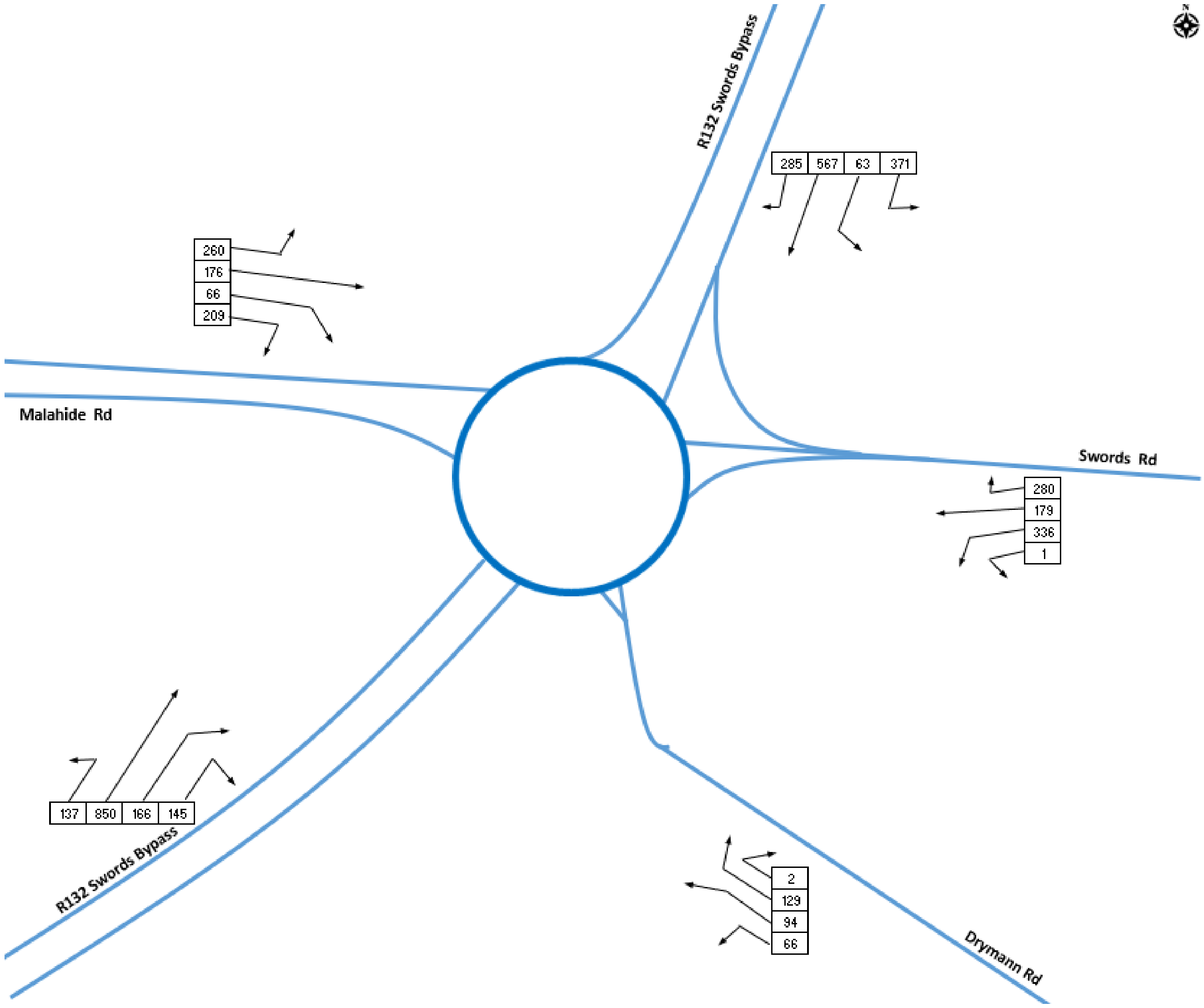


Figure 7.4: Malahide Rd Roundabout - PM 2018 Baseline Flows

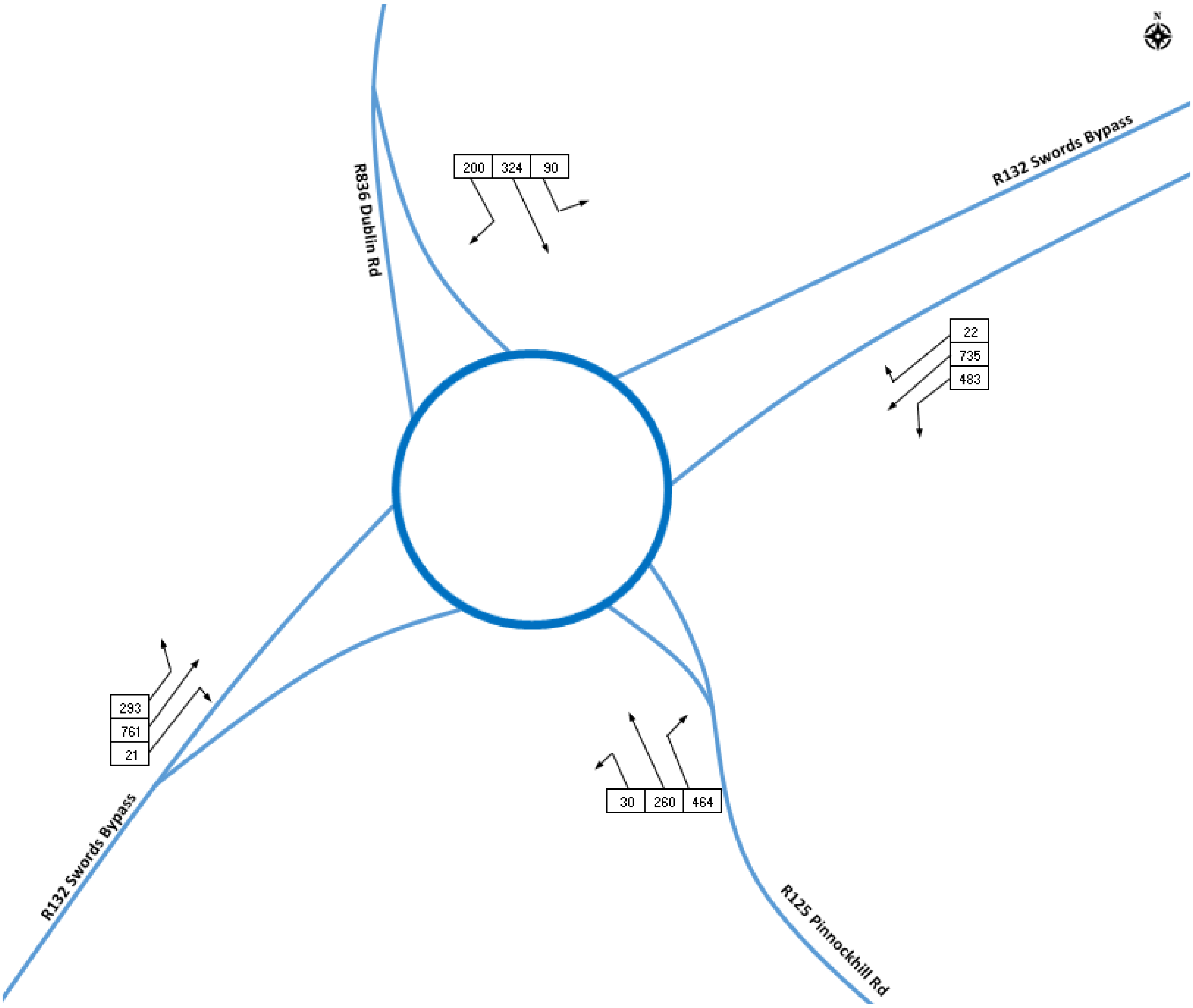


Figure 7.5: Pinnock Hill Roundabout - AM 2018 Baseline Flows

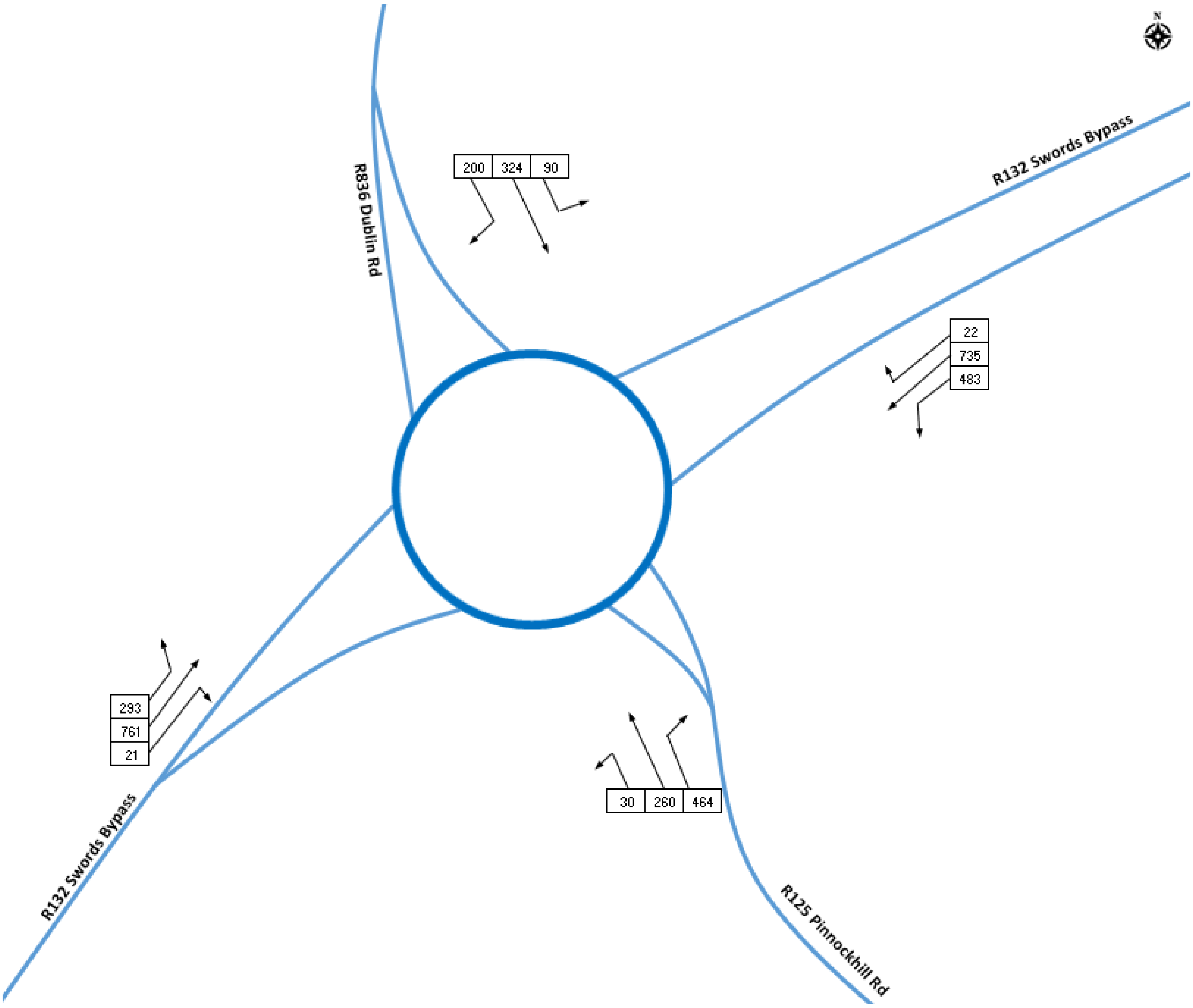


Figure 7.6: Pinnock Hill Roundabout - PM 2018 Baseline Flows

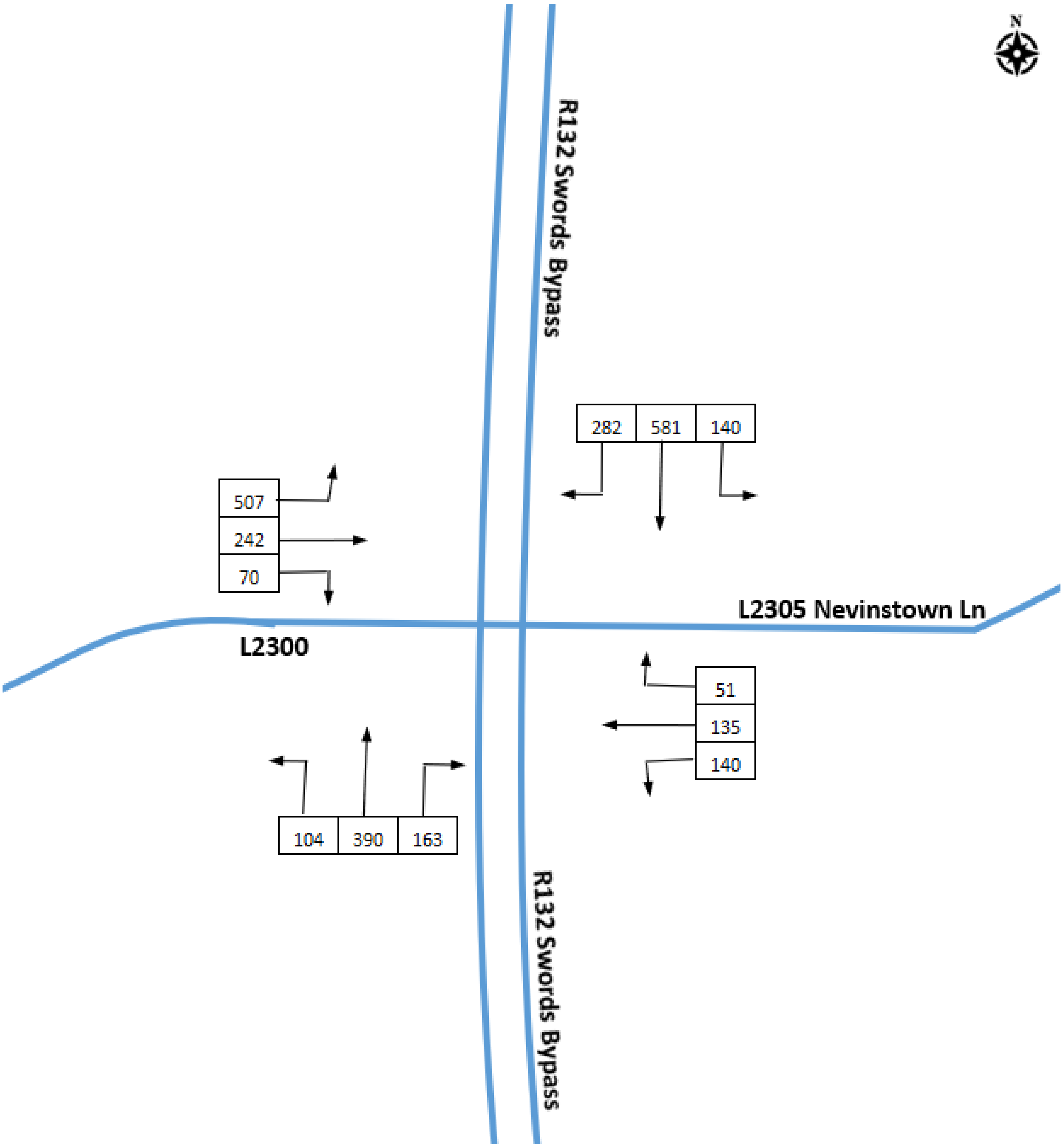


Figure 7.7: R132 / L2300 / L2305 Signalised Junction - AM 2018 Baseline Flows

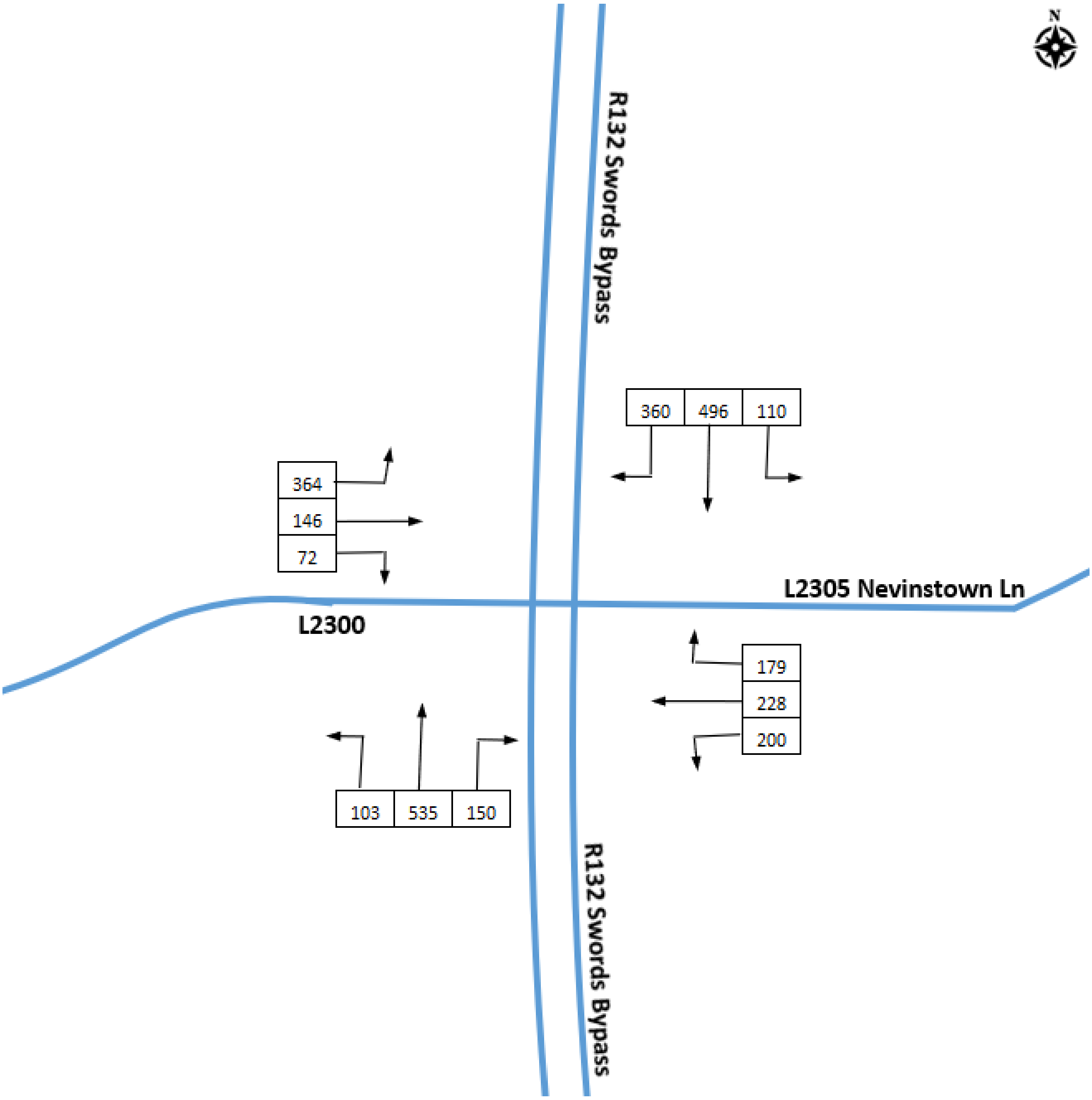


Figure 7.8: R132 / L2300 / L2305 Signalised Junction - PM 2018 Baseline Flows

Contents

1. Introduction

1.1 Background

Jacobs/IDOM has been commissioned to undertake the Environmental Impact Assessment Report (EIAR) in support of the proposed Dublin MetroLink Project (hereafter referred to as the proposed Project). The EIAR is being prepared to assess the environmental impacts of the proposed Project, including in relation to traffic and transport.

This Traffic and Transportation Assessment (TTA) assesses the operational impacts associated with the proposed Fosterstown Station on the Traffic and Transport network in the local area. TTA's have been prepared for each individual station as well as an overall TTA for the proposed Project.

Jacobs/IDOM has also been commissioned to undertake a scheme traffic management plan (STMP). The STMP is a standalone report within the EIAR. The STMP assesses the impact of the construction of the Project on all road users and proposes mitigation measures where appropriate.

A summary of the TTAs and STMP will be included within the Traffic and Transportation chapter of the EIAR.

1.2 Assessment Scenarios

In order to provide a rounded assessment of the Project, its impacts have been reviewed for a range of future years, and in the context of two alternative future scenarios. The forecast years are 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). As outlined in Table 1.1, Scenario A includes the project and committed transport schemes only, while Scenario B includes a range of further planned schemes depending on the forecast year.

Table 1.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project
Do Minimum Scenario	Committed transport schemes in the absence of the Project
Do Something - Scenario A	Scenario with the Project and committed transport schemes only
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for Opening year (2035) and planned schemes under the Transport Strategy for the GDA for the Design Year (2050) and the Forecast Year (2065)

Committed transport schemes in the Do Minimum scenario and in Scenario A, that have been progressed through planning and are either under construction or are programmed into the capital expenditure budget, include, but are not limited to:

- Luas Green Line Capacity Enhancement – Phase 1;
- BusConnects Dublin Area Bus Network Redesign; and
- Dublin BusConnects Fares and Ticketing.

Scenario B represents the likely future receiving environment and is based on the delivery of the schemes identified within the National Development Plan for 2035, and on the implementation of the NTA's Greater Dublin Area (GDA) Transport Strategy for 2050 and 2065. As such, this scenario considers the cumulative impacts of interactions between other projects that are most likely to impact on transport movements in the area. Schemes included in this scenario are, but are not limited to:

- Luas Green Line Capacity Enhancement - Phase 2;
- Luas Finglas;
- Luas Lucan;
- Dublin BusConnects Core Bus Corridors; and
- DART+.

More information on each modelled scenario is available in the Transport Modelling Plan (Appendix A9.3).

1.3 Project Overview

The Project will be a high-capacity, high frequency rail line running from Swords to Charlemont, linking Dublin Airport, Irish Rail, the Dublin Area Rapid Transit (DART), Dublin Bus and Luas services, improving integration across public transport network in the Greater Dublin Area (GDA).

As well as linking major transport hubs, the Project will connect key destinations including Swords, Ballymun, the Mater Hospital, the Rotunda, Dublin City University and Trinity College with much of the 19-kilometre route running underground.

When operations commence, there will be trains every 3 minutes during peak periods. This can rise to a service every 90 seconds, with the system capable of carrying a peak line flow of 20,000 passengers per hour in each direction.

1.3.1 Fosterstown Station

As shown in Figure 1.1, Fosterstown Station will be located on the eastern side of the R132 Swords Bypass between Pinnock Hill Roundabout (connecting the R132, R836 and R125) and the next junction to the south (connecting the R132, L2300 and L2305). The station will be located next to and partially within the Airside Retail Park.

The setting of the station at Fosterstown comprises a pocket of greenfield surrounded by urban development dominated by retail and residential land uses. Several fields are clustered either side of the R132 to the south of Pinnock Hill roundabout. The Airside Retail Park and Airside Business Park lie between the R132 and the R125. The farmland to the west of the R132 currently provides a buffer between the highway and extensive residential areas of Swords, but this land has been designated for new housing. The station site straddles farmland (which has been designated for future office / business / technology park development) and the Airside Retail Park.

Pedestrian access to each platform will be provided through a pair of escalators and a lift.

Interchange facilities include a relocation of the existing bus stop west of the station, a new drop-off area to the east of the station from the R125, and bike parking at the north with capacity of 422 bike spaces. Plans also include a proposed footpath linking the station to the existing parking area to the southeast.

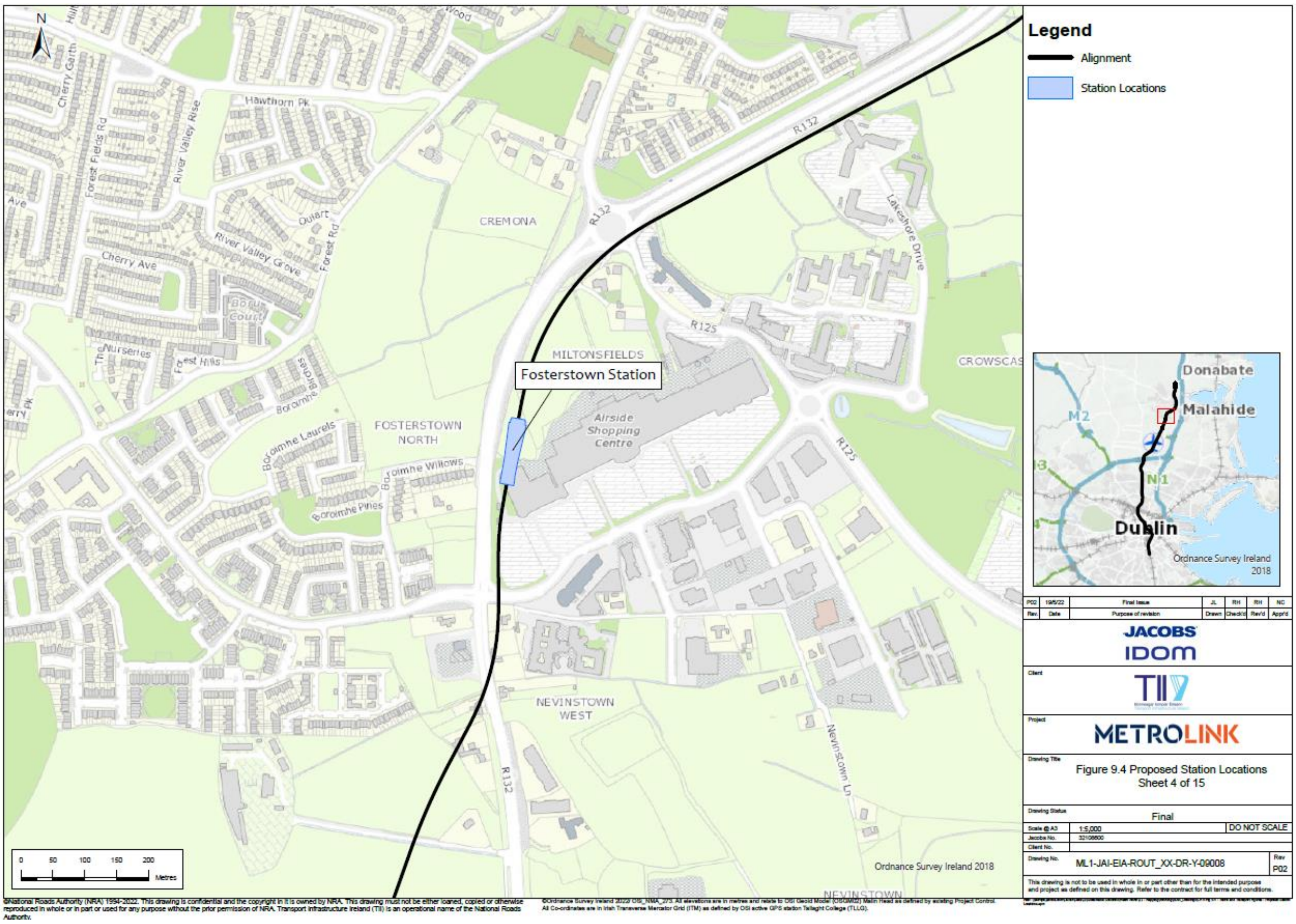


Figure 1.1: Proposed Fosterstown Station Location

2. Policy Context

Reference should be made to the Chapter 3 of the Overall Project TTA and Planning Policy Report (ML1-JAI-PLD-ROUT_XX-RP-Y-00020) for further detail on the overall project in relation to key national and regional policies.

This section assesses the Fosterstown Station proposals in relation to the following key local policies:

- Fingal Development Plan 2017-2023;
    - Swords Development Strategy;
    - Your Swords: An Emerging City, Strategic Vision 2035; and
    - Fosterstown MasterPlan 2019.
- Draft Fingal County Council Development Plan 2023-2029;
- South Fingal Transport Study 2019;
- Fosterstown Local Area Plan 2010; and
- Rathingle Local Area Plan 2013.

2.1 Fingal Development Plan 2017-2023

2.1.1 Swords Development Strategy

The Fingal Development Plan 2017-2023 provides for significant economic and population growth in Swords, Fingal's 'administrative capital'. A long term development strategy for Swords 'Your Swords: An Emerging City, Strategic Vision 2035' was published by Fingal County Council in 2008 (Fingal Development Plan, FCC), in which the vision is 'to promote and facilitate the sustainable development of Swords Town as a vibrant consolidated major town with a thriving economy; an integrated public transport network; and attractive and highly accessible built environment with the highest standards of housing, employment, services, recreational amenities and community facilities.'

The Development Strategy set out in the plan for Swords is as follows:

- Provide for a much-expanded employment, retail, commercial, educational, civic, and cultural base.
- Develop high quality public transport links to Dublin City, Dublin Airport and the GDA, with particular emphasis on the indicative route for New Metro North (now called MetroLink).
- Target and facilitate the development of high tech and advanced manufacturing and other high intensity employment generating uses and service providing uses.
- Promote the development of high-quality living and working environments.
- Develop Swords in the long term in accordance with 'Your Swords: an Emerging City, Strategic Vision 2035'. This strategic vision is contingent on the indicative route for New Metro North (now called MetroLink) coming to Swords.
- Promote lands at Lissenhall as a longer-term strategic area, a mixed-use urban district providing for significant levels of employment and residential development.

2.1.2 Your Swords: An Emerging City, Strategic Vision 2035

'Your Swords: An Emerging City, Strategic Vision 2035' provides the background and assessment of options developed by Fingal County Council to support the future growth and development of Swords. This document was considered in the compilation of the Swords Masterplan.

The Strategic Vision ensures that Swords will incorporate and be synonymous with:

- A Green City – in terms of the physical landscape and sustainable environmental objectives.
- An Integrated Transport Strategy, comprising significant public transport services (including Metro North (now called MetroLink), and local and regional bus services) and strategically important road infrastructure.

The strategy envisages the Metro North Economic Corridor (MNEC), along the Metro North alignment (now called MetroLink), facilitating opportunities for high-density, mixed-use, and employment-generating activities, as well as for commercial and residential development. The designated sites for development will form sustainable districts with high connectivity and accessibility and will be provided with the necessary infrastructure.

2.1.3 Fosterstown Masterplan 2019

As part of Fingal Development Plan 2017-2023, the Swords Masterplan Part C Fosterstown was published in May 2019. The vision for Fosterstown is 'to create a residential community that is mixed and balanced and forms a clear nexus with the scale of commercial development anticipated on the nearby Barrysparks and Crowscastle area.' It is noted that the Fosterstown residents, to the west of the proposed station, have 'a unique opportunity to utilise the new connections that will emerge in Swords via the MetroLink station and Core Bus Corridor on the R132.'

The lands incorporate approximately 13.14ha of greenfield land in south-west Swords. The lands are bound by the R132 to the east, Forest Road to the west, and Boroimhe housing estate to the south.

The masterplan also seeks to facilitate strong pedestrian and cyclist connections, as well as strong connections to the town centre and public transport infrastructure, as shown in Figure 2-1. The masterplan also incorporates pedestrian and cyclist connections to facilitate access to the Metro station and Swords Main Street.

Figure 2.1: Transport and Movement at Fosterstown Masterplan Lands (Swords Masterplan Part C Fosterstown)

2.2 Draft Fingal County Council Development Plan 2023-2029

Building on the objectives of the Fingal County Council Development Plan 2017-2023, the Draft Fingal County Council Development Plan 2023-2029 recognises the role the delivery of MetroLink will play in connecting Swords to the Dublin City Centre, and the Dublin Airport. Swords is identified as a Key Town within the Development Plan, and the implementation of MetroLink will assist in meeting policies and objectives set out in the Development Plan.

Policy CSP28 – Promote and Facilitate MetroLink

- Promote and facilitate the development of Metrolink, connecting Swords to the Airport and on to the City Centre.

Objective CSO39 – Swords – Dublin Airport

- Support Swords-Dublin Airport as a key location for airport related economic development and employment provision linked to the protection and enhancement of access to Dublin Airport lands including the delivery of Metrolink.

2.3 South Fingal Transport Strategy 2019

In September 2017, Fingal County Council commissioned SYSTRA Ltd to undertake the South Fingal Study. The South Fingal Transport Study ‘is a study of the transport network in South Fingal recommending key transport infrastructure and outlines the levels of land use development that will enable its sustainable growth leading up to the delivery of MetroLink and beyond’ (FCC, 2017). As a result, the study considers the most critical road, public transport and active travel schemes that Fingal should implement in the next decade; sustainable ways of improving Fingal’s integration and connectivity with Dublin City Centre; infrastructure required to meet demand in advance of the Project; and measures that Fingal County Council should implement to maintain and protect the strategic function of Dublin Airport into the future.

In this study, Seatown falls under the recommendations for the Swords area, with planned development including the promotion of Swords as Fingal's primary growth centre for residential development and a multimodal transport hub.

It has a number of recommendations including improving the frequency of public transport services, while also unlocking significant potential to increase the level of walking and cycling in Swords.

The recommendations identified with specific reference to the Project include:

- The Swords Western Distributor Road would provide additional resilience to the local network in the context of diverting traffic from Main Street, and in addition to providing direct access to the MetroLink Park and Ride at Estuary;
- Future interchange to the MetroLink from other modes, including bus, walk and cycle should be considered as part of any redevelopment of Swords Main Street and the R132 Swords Bypass; and
- The Swords Western Relief Road is an objective of the Fingal Development Plan with a strategic function to provide a link between the M1/M50 and Dublin Airport to support the long-term growth of Swords.

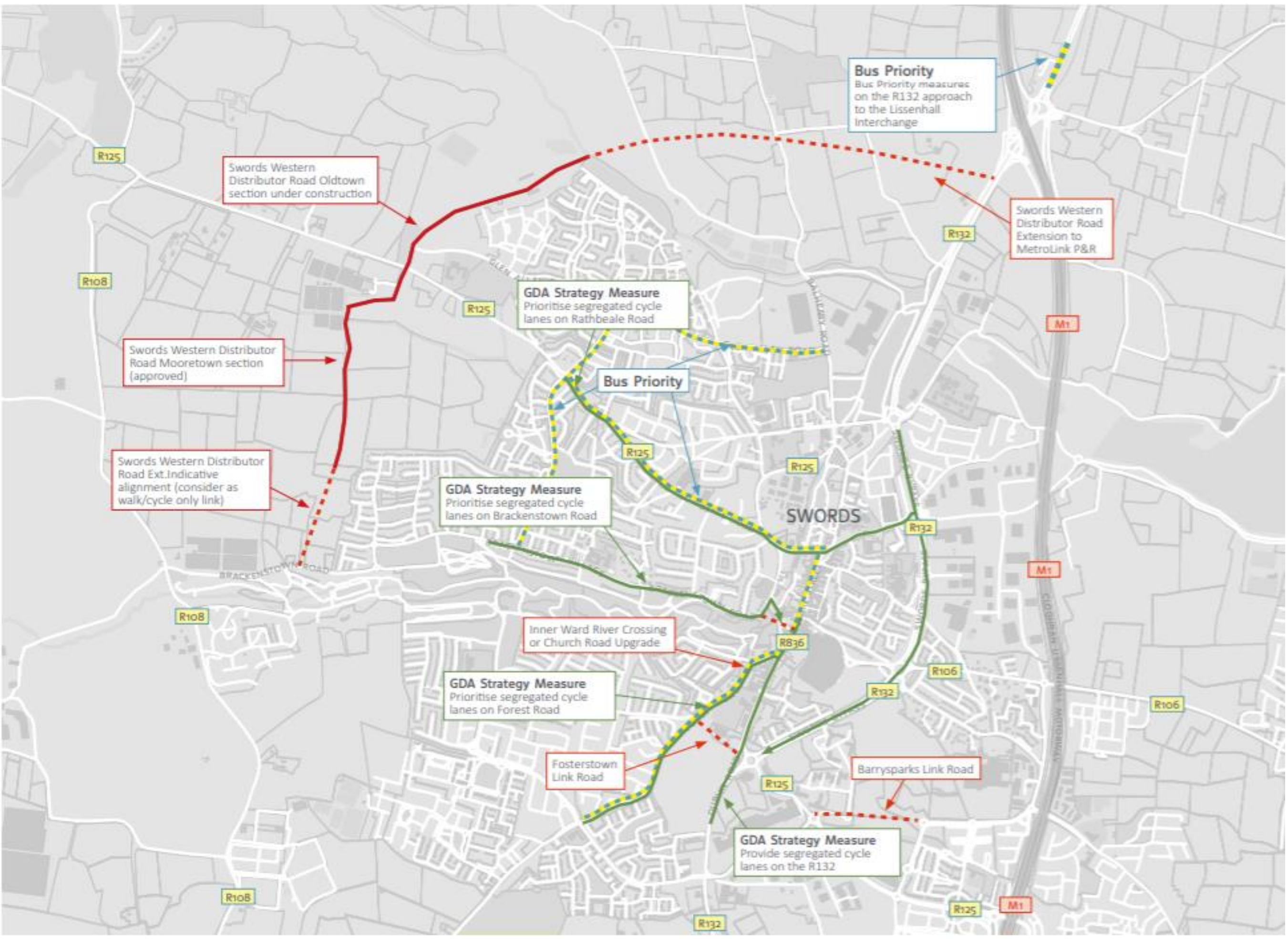


Figure 2.2: Swords Short Term Recommendations Map (source: South Fingal Transport Study)

2.4 Fosterstown Local Area Plan (Fingal County Council, 2010)

The Fosterstown Local Area Plan (LAP) comprises of approximately 13 hectares of lands located to the south of Swords, at the boundary with the town centre to the west of the R132. The LAP proposes high quality residential development. Similarly to the Barrysparks LAP, the LAP acknowledges the importance of Metro North (now called MetroLink) in facilitating high density at this location stating that 'given the location of the LAP lands within easy walking distance of the Fosterstown Metro stop and immediately adjacent to the town centre zoned land, an average net density of circa 80 - 90 units per hectare is considered appropriate for the plan lands subject to appropriate design and amenity standards as stated in this LAP, being met'.

2.5 Rathingle Local Area Plan (Fingal County Council, 2013)

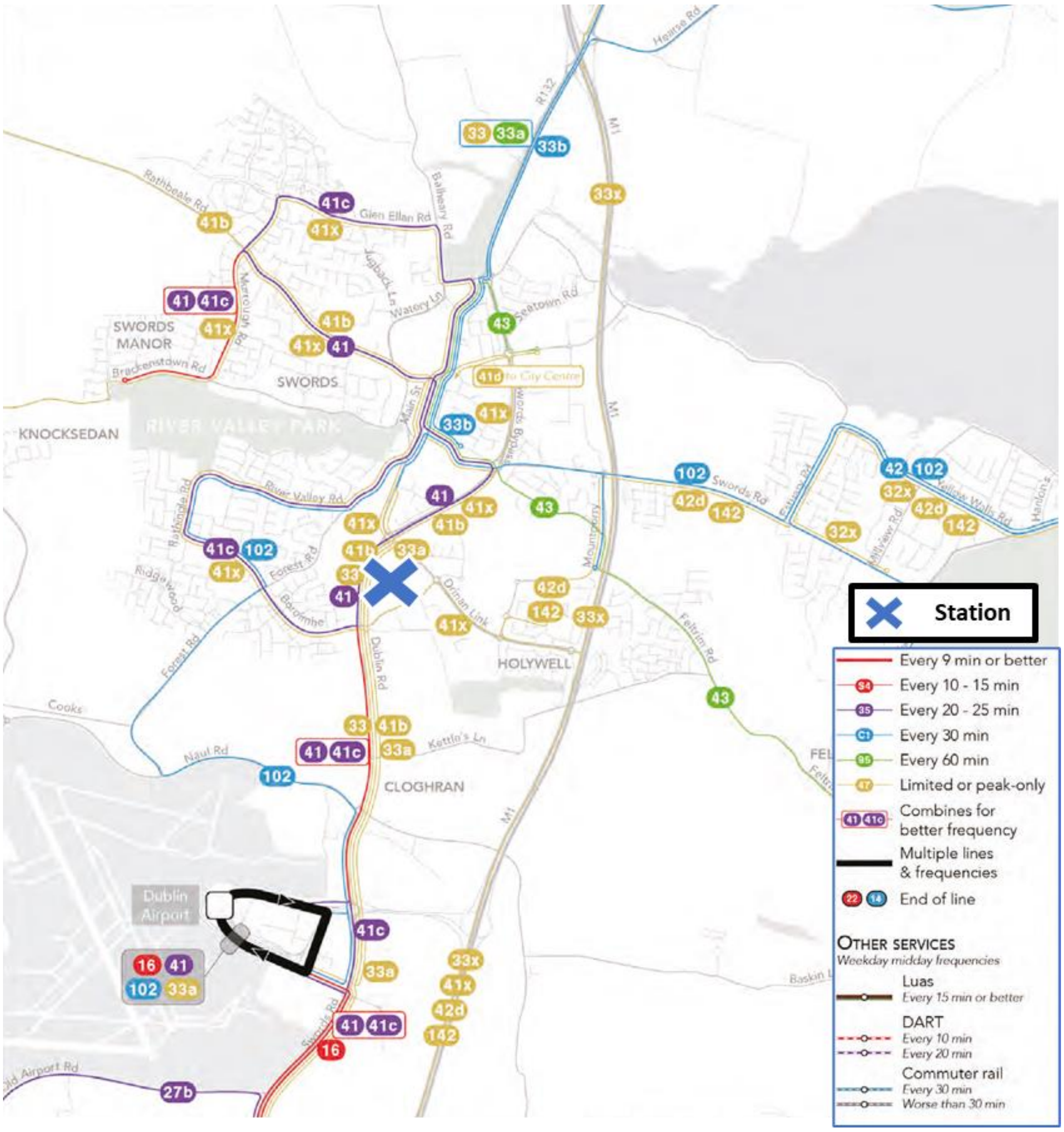
It is noted in the Rathingle Local Area Plan that the residents in Rathingle would significantly benefit from the development of Metro North (now called MetroLink).

3. Baseline Conditions

This section describes the existing receiving environment within the vicinity of the Fosterstown Station and the wider environs, and identifies the future receiving environment for all modes of transport if conditions are planned to change in advance of the construction of the Project, such as the delivery of other proposed infrastructure projects.

3.1 Existing Public Transport Network

The proposed station is located along the R132 where the Dublin Bus network runs as well as Bus Éireann services. Figure 3.1 below shows that the station is located near low-frequency bus services that operate during peak hours (41x and 41b). Routes 41 and 41C combined allow for frequencies of 9 minutes or better.



(Base Source: www.busconnects.ie)

Figure 3.1: Existing bus network around Fosterstown Station

Figure 3.2 below shows the existing public transport network within a 600m buffer of Fosterstown Station. There are 12 bus stops within the buffer catchment, two of which are located within the station's immediate vicinity.

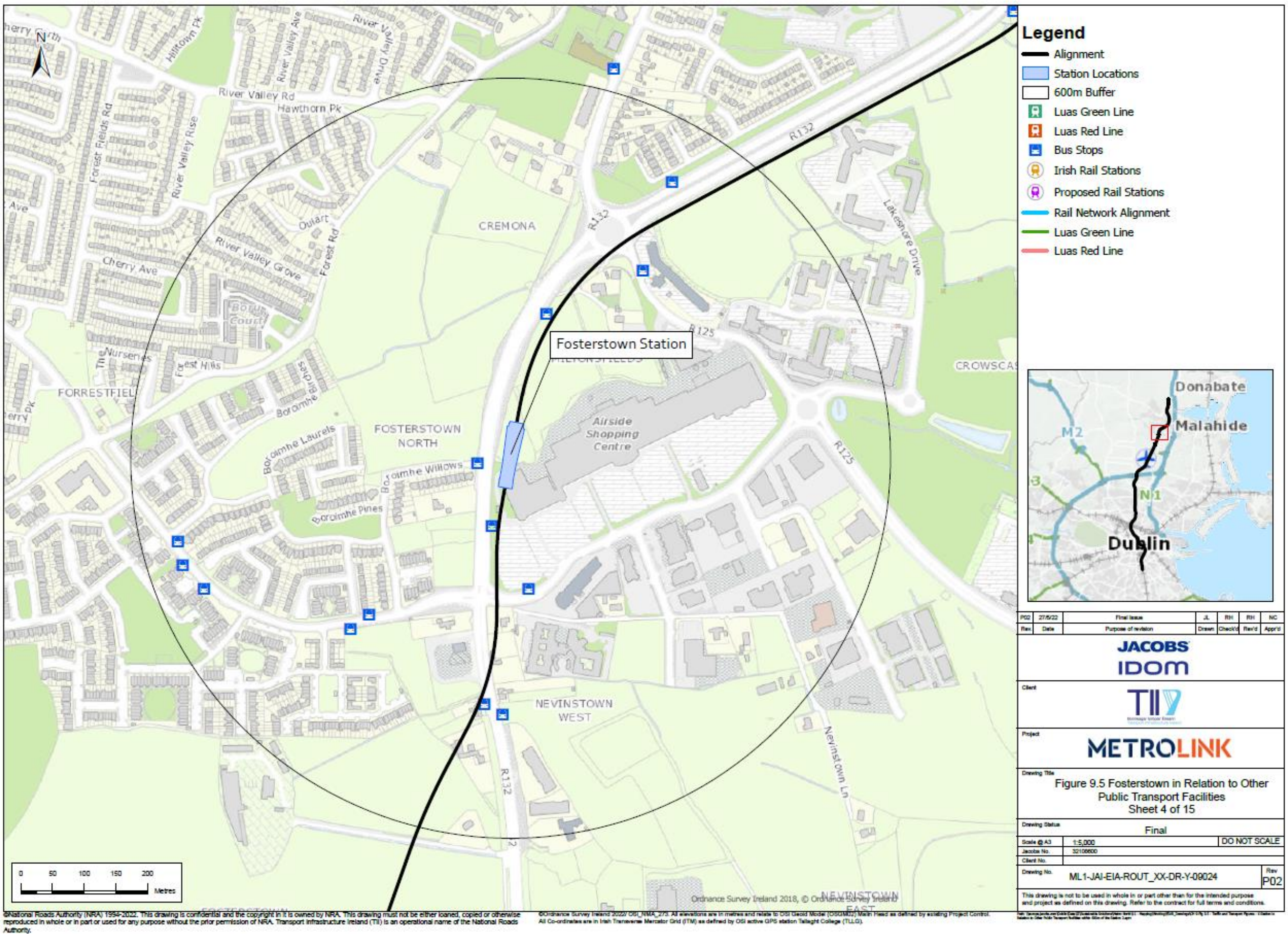


Figure 3.2: Transport facilities within 600m buffer

The area is also serviced by the Swords Express routes 500x, 501, 501x and 506x, shown in Figure 3.3.

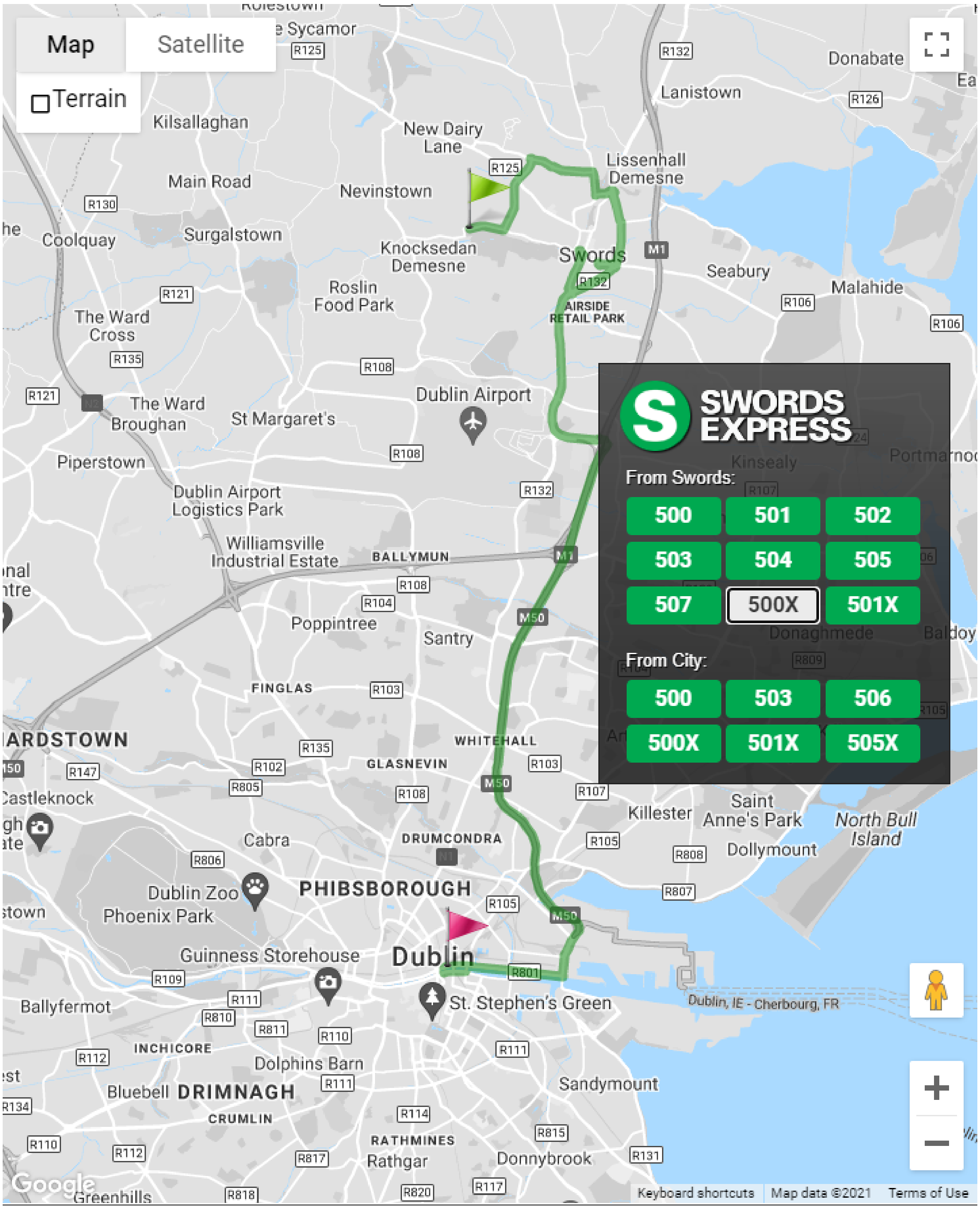


Figure 3.3: Swords Express Routes (www.swordsexpress.com)

3.2 Future Receiving Environment – Public Transport Network

The Fosterstown Station is also located in close proximity to the Bus Network Redesign proposed A4 Spine and other local routes as shown in Figure 3.4. The A4 Spine has a frequency of 12-30 minutes during the week, 15-20 minutes on a Saturday and every 20-30 minutes on a Sunday. Other city bound routes such as the 22 and local routes L82, L83 and L85 also run past the station.

(Base Source: www.busconnects.ie)

Figure 3.4: Proposed Bus Network Redesign around Fosterstown Station

3.3 Existing Road Network

Fosterstown Station is located to the eastern side of the R132 between Pinnock Hill Road and the L2305 Nevinstown Lane. The station lies approximately 1.4km to the west of the M1. The R125 provides a direct route from the M1 Junction 3 to the R132 at Pinnock Hill Roundabout, north of Fosterstown Station. Smaller roads south of the station such as the L2300 serve residential areas in Ridgewood and River Valley. The L2305, Nevinstown Lane, is the main road serving Airside Retail Park (see Figure 3.5).

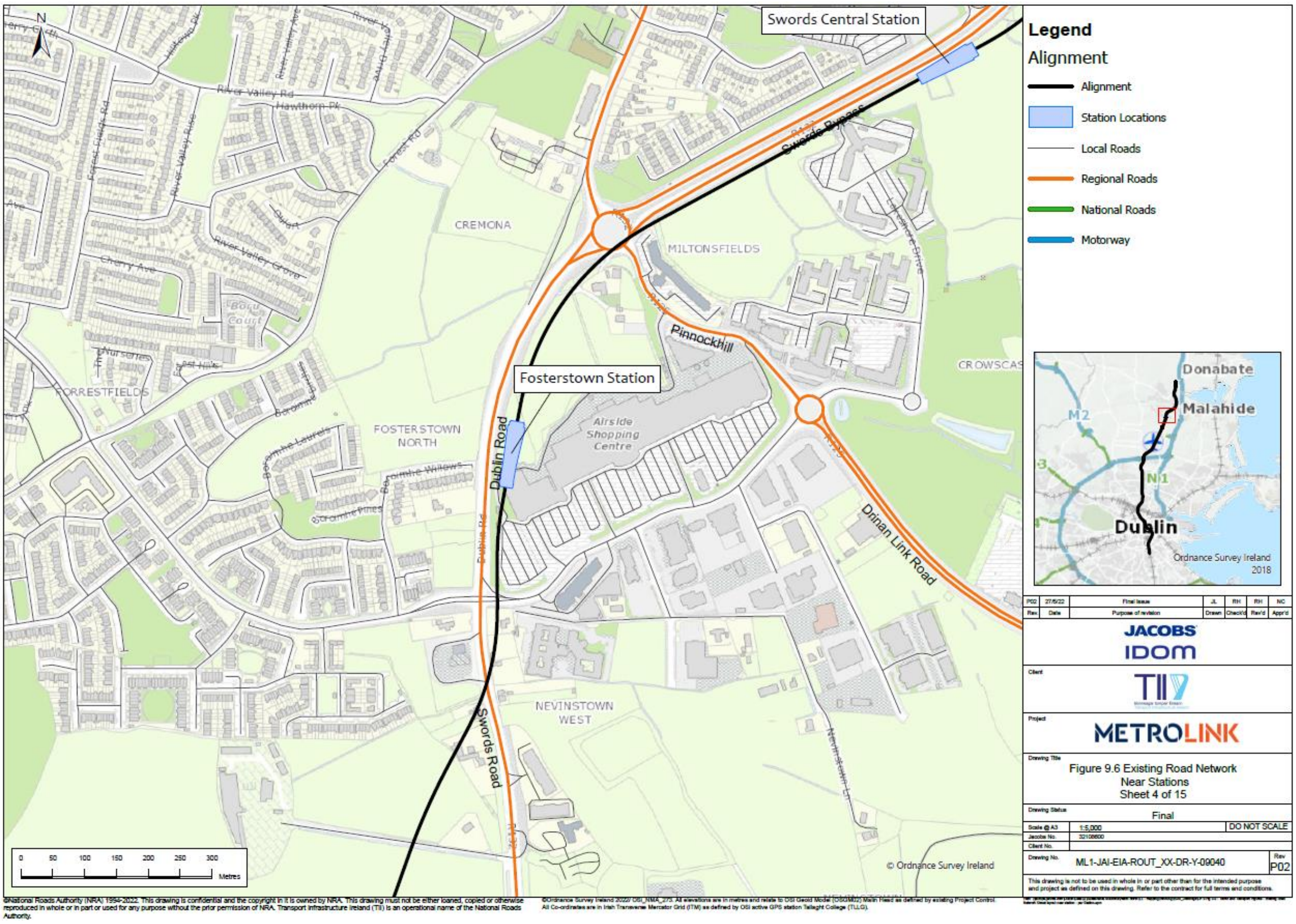


Figure 3.5: Street layout near Fosterstown Station

The R132 is a two-way dual carriageway of 19m width. In its closest section to the Fosterstown Station, the road has one traffic lane and one bus lane for the northbound and two traffic lanes and one bus lane for the southbound. Cyclists use the bus lanes on this section of the R132.

The L2305 is a 9m wide, two-way single carriageway road with one traffic lane per direction and no bus or cycle lanes. The road has a flare for left turns and ahead movements as it approaches the R132.

3.3.1 Junction Turning Counts

The Data Collection Report (ML1-JAI-TRA-ROUT_XX-RP-Y-00023) details the methodology and specification of traffic surveys undertaken for the Project. The survey locations relevant to Fosterstown Station are shown in Table 3.1. Vehicle classifications used for the survey were Car, LGV, OGV1, OGV2, PSV, Motorcycle and Pedal Cycle. PCU values were also reported using appropriate conversion factors for each vehicle classification. The resulting PCU values from the survey results have been used for the LinSig modelling.

Table 3.1: Survey Locations Around Fosterstown Station

Junction	Type of Survey
Malahide Road Roundabout (R132 / R106)	Classified Junction Turning Counts (CJTC)
Pinnock Hill Roundabout (R132 / R125 / R836)	CJTC
R132 / L2300 / L2305 Signalised Junction	CJTC

3.3.2 Base Traffic Flows

The junctions identified in Table 3.1 as relevant to Fosterstown Station are also considered within the Swords Central Station TTA (ML1-JAI-TRA-MS03_XX-RP-Y-00001) therefore in order to avoid duplication, reference should be made to that document in order to obtain further information on the base traffic flows.

3.3.3 Forecast Traffic Growth

Forecast traffic growth rates have been obtained from the Eastern Regional Model (ERM) for future years 2035, 2050 and 2065, for the appropriate scenario.

3.4 Future Receiving Environment – Road Network

The Swords Western Relief Road (SWRR) is an objective of the Fingal Development Plan 2017-2023, which is proposed to connect the R132 north of the M1 Lissenhall junction and proceeds for approximately 9km through rural Fingal to the N2 north of the M50. The SWRR 'could remove significant volumes of traffic from the Swords Town Centre area, as well as serving strategic traffic between the M1 and M2/M50 corridors.' It could also 'serve the proposed strategic park and ride, minimising the amount of traffic utilising limited carrying capacity on the existing and proposed local road network in Swords.'

The main vehicular access to the Fosterstown Masterplan lands will be via the new Fosterstown Link Road from the R132 to the Forest Road (the detailed designs of Fosterstown Link Road and junction layout will be subject to consultation through the planning consent process). The Pinnock Hill Roundabout on the R132 will be upgraded to accommodate the new link road. Secondary access to the site will be via new entrances to the south of Forest Road.

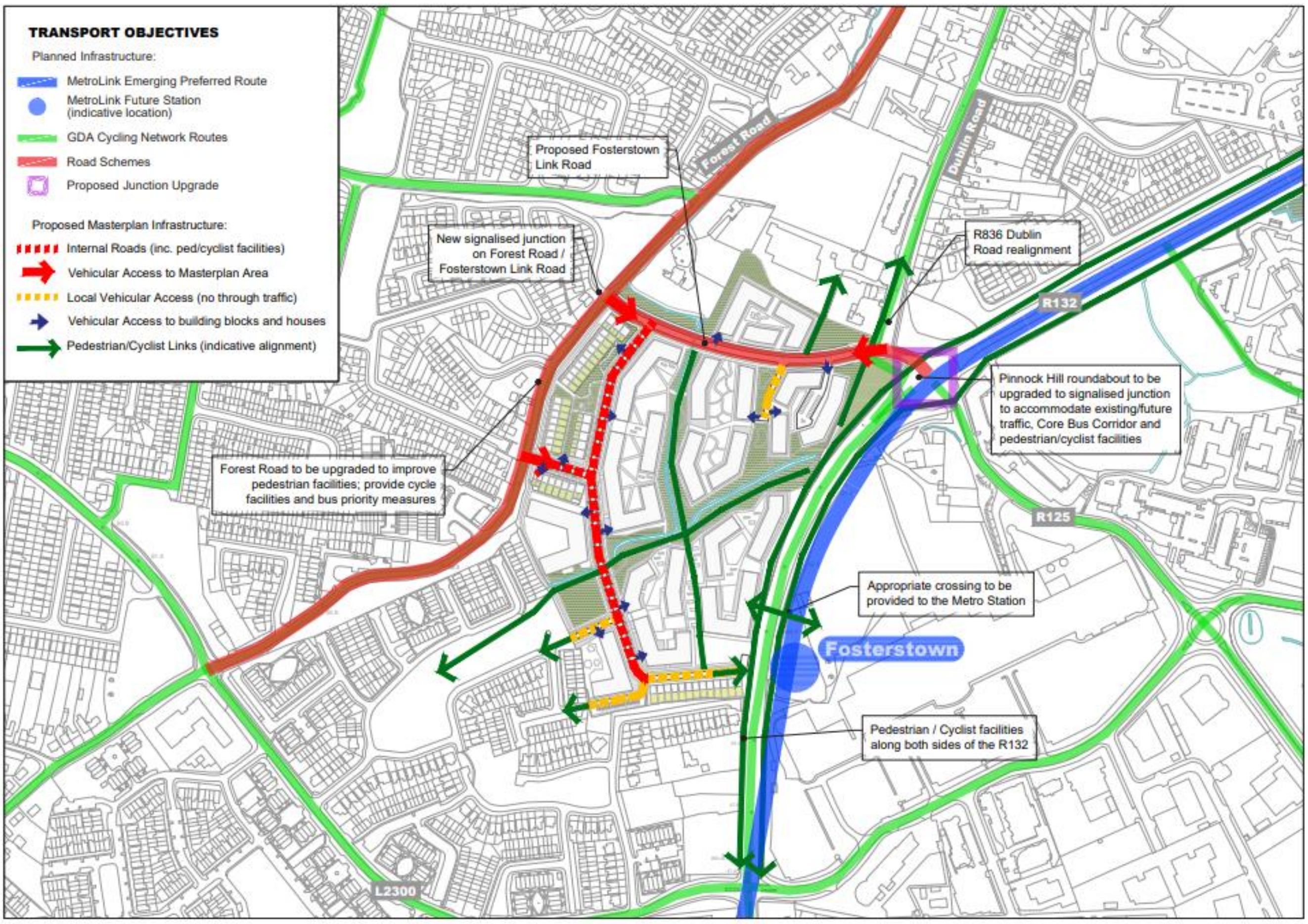


Figure 3.6: Transport Objectives of Fosterstown Masterplan Lands (Swords Masterplan Part C Fosterstown)

As part of the R132 Connectivity Project, a new signalised crossing point will be provided along the R132 to the north of Pinnock Hill Roundabout.

The BusConnects Core Bus Corridors project will upgrade the Pinnock Hill roundabout to a signalised junction.

3.5 Existing Pedestrian Network

On the R132, footways exist on both sides of the carriageway, of approximately 1.5m in width. Currently, there is no crossing provision to facilitate pedestrian movements from the northbound side of the R132 to the proposed station location on the southbound side.

Footways along the R125 to the north of Airside Retail Park are approximately 1.5m in width. Shared use paths exist along the full stretch of the L2300, with a total width of approximately 2.5m. However, once the road meets the R132, the shared use path ends and becomes a single use footway of approximately 1.5m.

3.5.1 Pedestrian Link Counts

The Data Collection Report (ML1-JAI-TRA-ROUT_XX-RP-Y-00023) details the locations around Fosterstown Station where pedestrian surveys were undertaken.

3.5.2 Baseline Pedestrian Accessibility Review

A baseline accessibility assessment has been undertaken to establish existing walking provision relevant to the proposed Fosterstown Station. Catchment maps prepared for the accessibility analysis for walking are based on two criteria, the average speed for each mode and the existing road network. Therefore, maps do not reflect existing access restrictions for private roads and motorised roads.

As the AZ1 Northern Section lies within FCC bounds, the footway provisions have not been assessed against the DCC pedestrian comfort guidance, however the assessment against the TfL Pedestrian Comfort Calculator has been undertaken. At Fosterstown, all links are deemed to be ‘Comfortable’, with the exception of the R125 Airside due to the restricted 1m wide footway on one side of the road only.

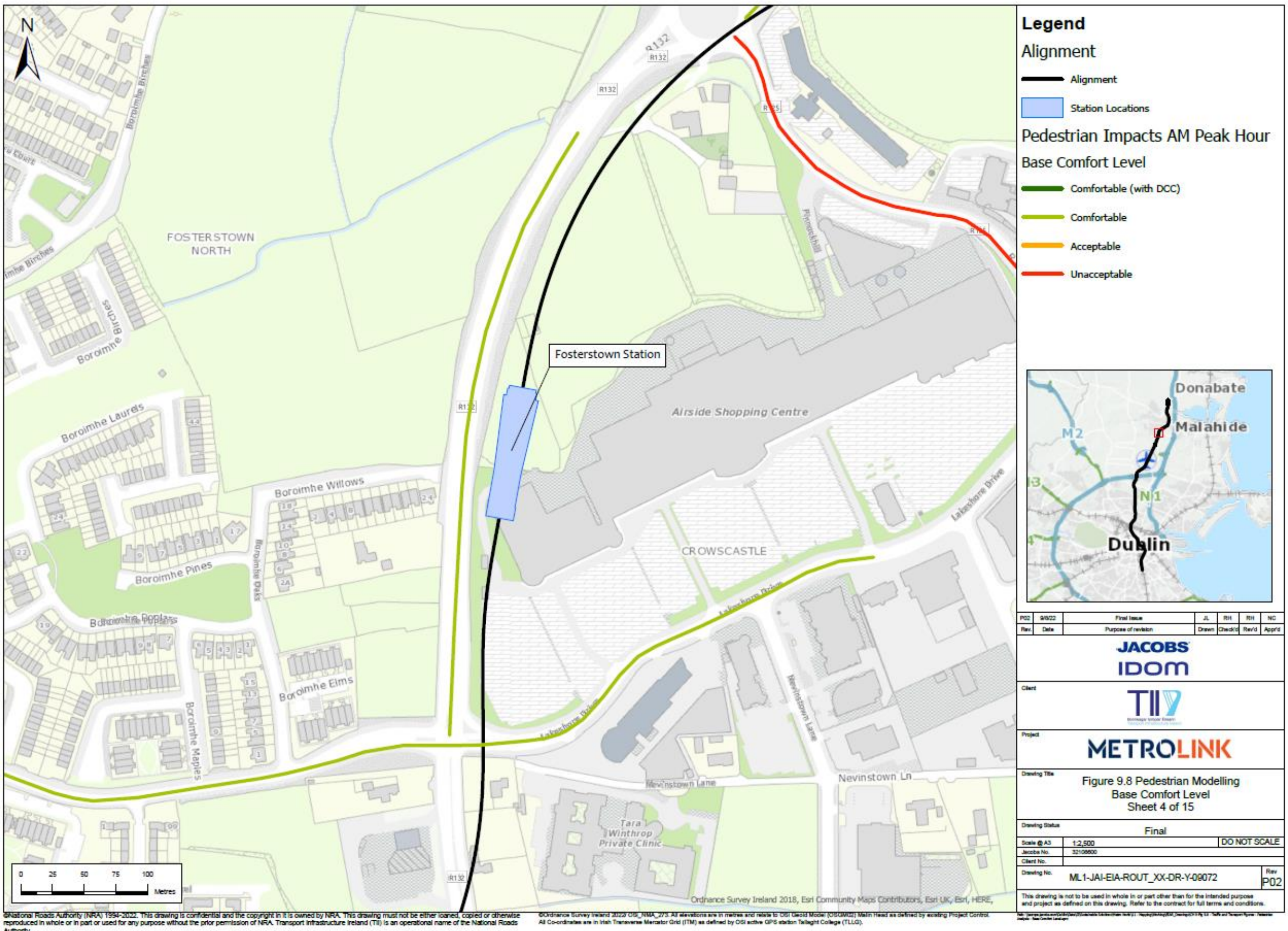


Figure 3.7: Baseline Pedestrian Comfort Assessment at Fosterstown Station

The proposed Fosterstown Station is located close to the catchment of the Boroimhe, Ridgewood and River Valley residential areas. Much of this catchment is located within an appropriate walking distance of the proposed Station as shown in Figure 3.8 below.

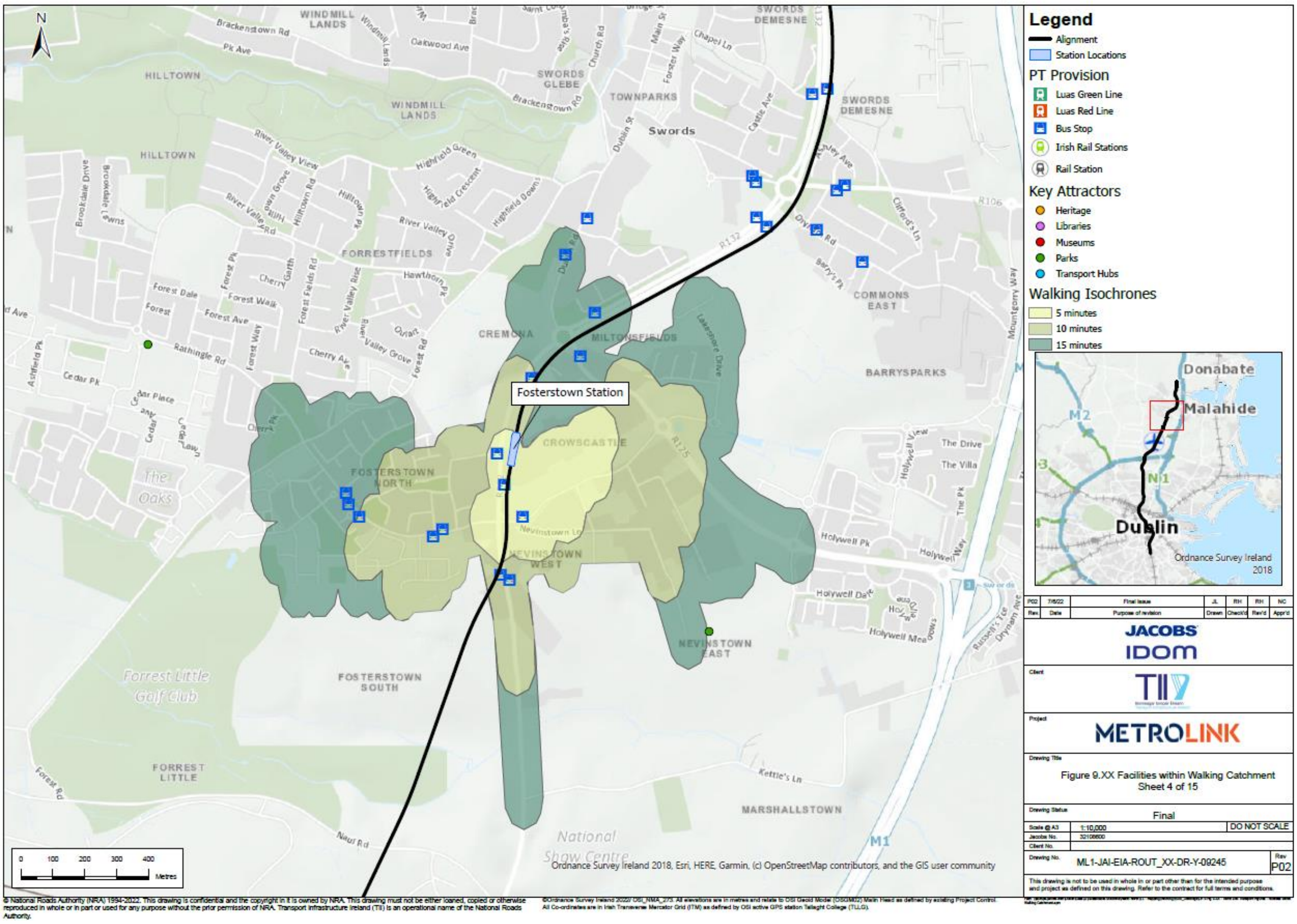


Figure 3.8: Fosterstown Station Walking Catchment Area

Table 3.2 below lists local amenities within the 5-minute walking, 10-minute walking and 15-minute walking catchments from the Fosterstown Station.

Table 3.2: Local facilities and amenities within walking catchment area

Facilities within 5min walking	Facilities within 10min walking	Facilities within 15min walking
Airside Retail Park	Various shops within Airside Retail Park	Tesco Superstore
Premier Inn Dublin Airport Hotel		Lidl
VHI SwiftCare Medical Centre		Swords Veterinary Hospital

3.6 Future Receiving Environment – Pedestrian Network

The Fosterstown masterplan seeks to facilitate strong pedestrian and cyclist connections, as well as strong connections to the town centre and public transport infrastructure. The masterplan also incorporates pedestrian and cyclist connections to facilitate access to the Metro station and Swords Main Street.

The R132 Connectivity Project will upgrade the existing roundabouts to signalised junctions, improving connectivity across the R132 through the provision of improved pedestrian footways and crossings. The BusConnects Core corridors will upgrade the Pinnock Hill Roundabout to a signalised junction, providing improved pedestrian crossing facilities and improved footpath provision.

3.7 Existing Cycle Network

Figure 3.9 illustrates Fosterstown Station within the GDA Cycle Network. The cycle network in the vicinity of Fosterstown station consists mainly of Secondary Routes and the Feeder Network as part of the GDA Cycle Network.

Cyclists travelling on the R132 southbound from Pinnock Hill roundabout towards Fosterstown station share the bus lane. This is considered an area with Level B Quality of Service.

At the Airside Retail Park, there are segregated cycle paths either side of the L2305 Nevinstown Lane, of approximately 1.5m wide. This is considered an area with Level A Quality of Service.

Cyclists travelling from the Holywell area, next to the M1, are able to use the segregated cycle lane on the R125 that runs in an east-west direction from the M1 to Pinnock Hill Roundabout, north of Fosterstown Station. This is considered an area with Level C Quality of Service.

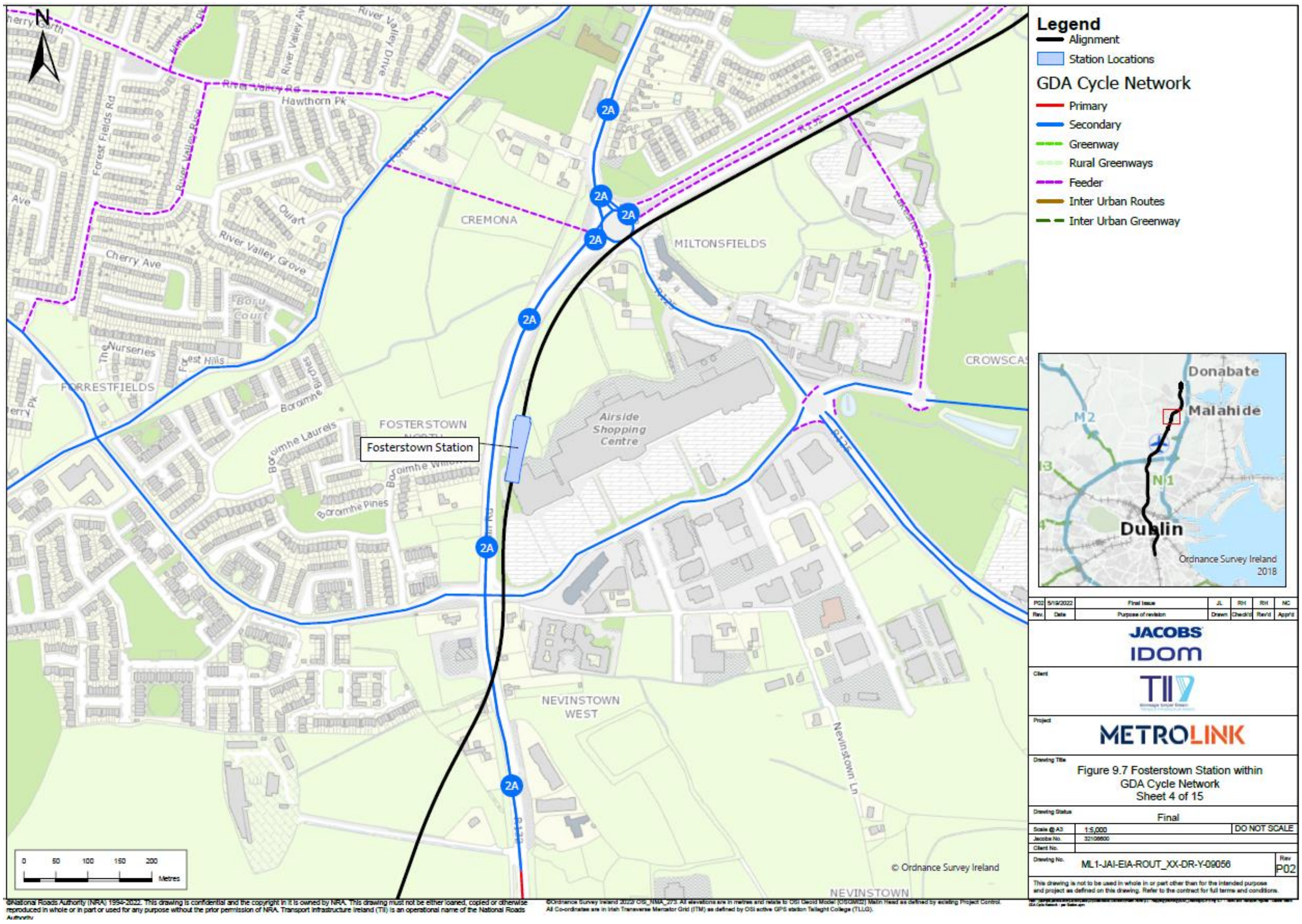


Figure 3.9: Fosterstown Station within GDA Cycle Network

3.7.1 Baseline Cycle Accessibility Review

A baseline accessibility assessment has been undertaken to establish existing cycling provision relevant to the proposed Fosterstown Station. Catchment maps prepared for the accessibility analysis for cycling are based on two criteria, the average speed for each mode and the existing road network. Therefore, maps do not reflect existing access restrictions for private roads and motorised roads.

Figure 3.10 shows that nearby residential areas such as Boroimhe, Ridgewood and River Valley, located to the west of the Estuary Station, within Fosterstown North, Rathingle and Hilltown respectively, are within a reasonable distance to cycle to the site.

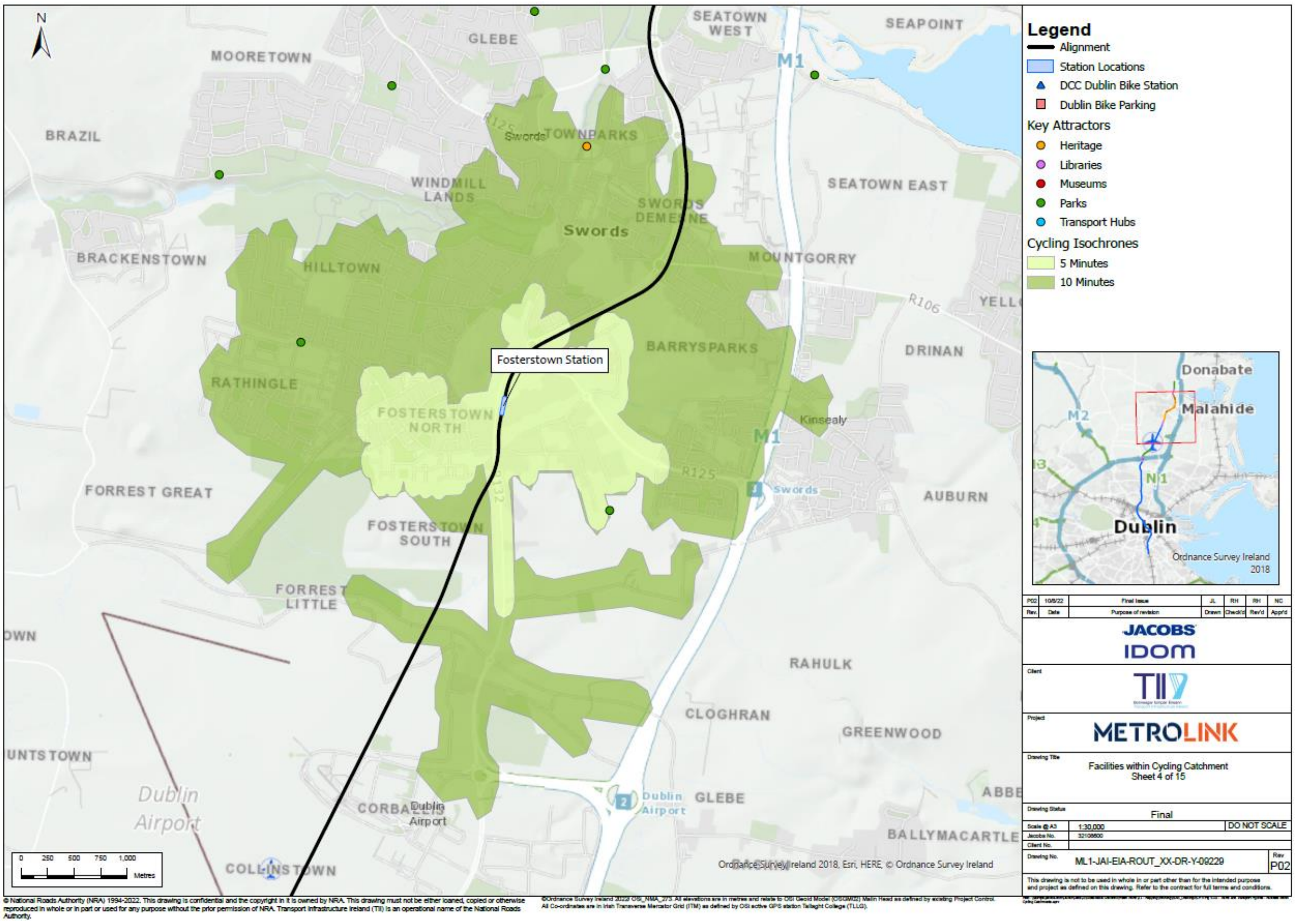


Figure 3.10: Fosterstown Station Cycling Catchment Area

Table 3.3 below details the local facilities and amenities within the cycling catchment areas.

Table 3.3: Local facilities and amenities within cycling catchment area

Facilities within 5min cycling	Facilities within 10min cycling
Tesco Superstore	Various restaurants, cafes and banks
Lidl	Pavilions Shopping Centre
Swords Veterinary Hospital	Kinsealy Medical Centre
	PrimeHealth Medical Centre
	Scoil an Duinnínigh
	Colaiste Choilm Swords
	Fingal Community College
	Old Borough National Schoola
	Aldi, JC's Supermarket, Lidl, Tesco Express
	Swords Castle
	Swords Library

Facilities within 5min cycling	Facilities within 10min cycling
	Ward River Valley Park
	Holywell Community Centre

3.8 Future Receiving Environment – Cycle Network

Improvements to the cycling network as part of the development of the Fosterstown Masterplan have been noted in section 3.6 Future Receiving Environment - Pedestrian Network.

When the R132 Connectivity Project is delivered and the existing roundabouts are changed to signalised junctions, there will be improved connectivity across the R132 with the provision of designated cycle lanes and cycle crossings across the R132.

The BusConnects Core Bus Corridors project will provide for improved cycle provision at the Pinnock Hill roundabout, along with high quality cycle lanes along the length of the R132, southwards from the Pinnock Hill roundabout.

4. The Proposed Project – Fosterstown Station

4.1 Site Location and Development Context

The proposed Fosterstown Station is located at the Airside Retail Park on the R132, as Figure 4.1 below shows. It is situated to the east of the Boroimhe, Ridgewood and River Valley residential areas. Seatown Station and Swords Central Station are situated north of the station while the M1 is to the east of Fosterstown Station.

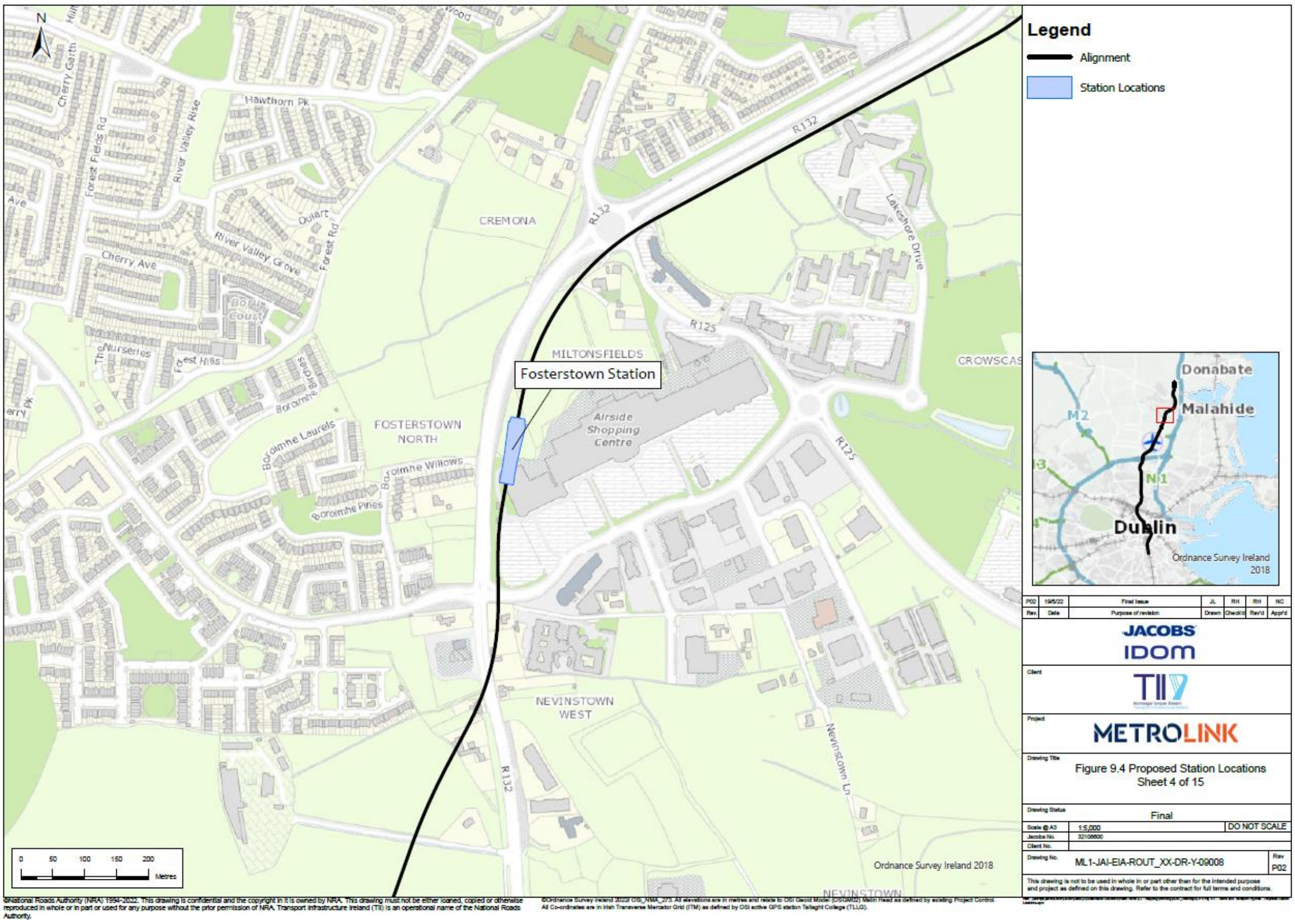


Figure 4.1: Proposed Site Location

Figure 4.2 illustrates the proposed layout for Fosterstown Station including improvements to pedestrian crossings, location of entrances and exits, park & ride bays, drop off bays and bike parking area. The bike parking will have a capacity of 422 bike spaces and the drop off area will accommodate 5 cars. The station platforms can be accessed via the proposed footway provision to the east of the proposed station, which ties into the existing access road to the Airside Retail Park. The platforms can also be accessed from the proposed footway provision on the east side of the R132 as it passes the station. A southbound bus stop is also proposed on the east side of the R132, to the immediate north of the station, which will provide a straightforward interchange opportunity for southbound services. There is an existing northbound bus stop on the west side of the R132. A pedestrian crossing is provided to the west of the station access to facilitate safe crossing from this stop, and interchange between the Project and the bus network.

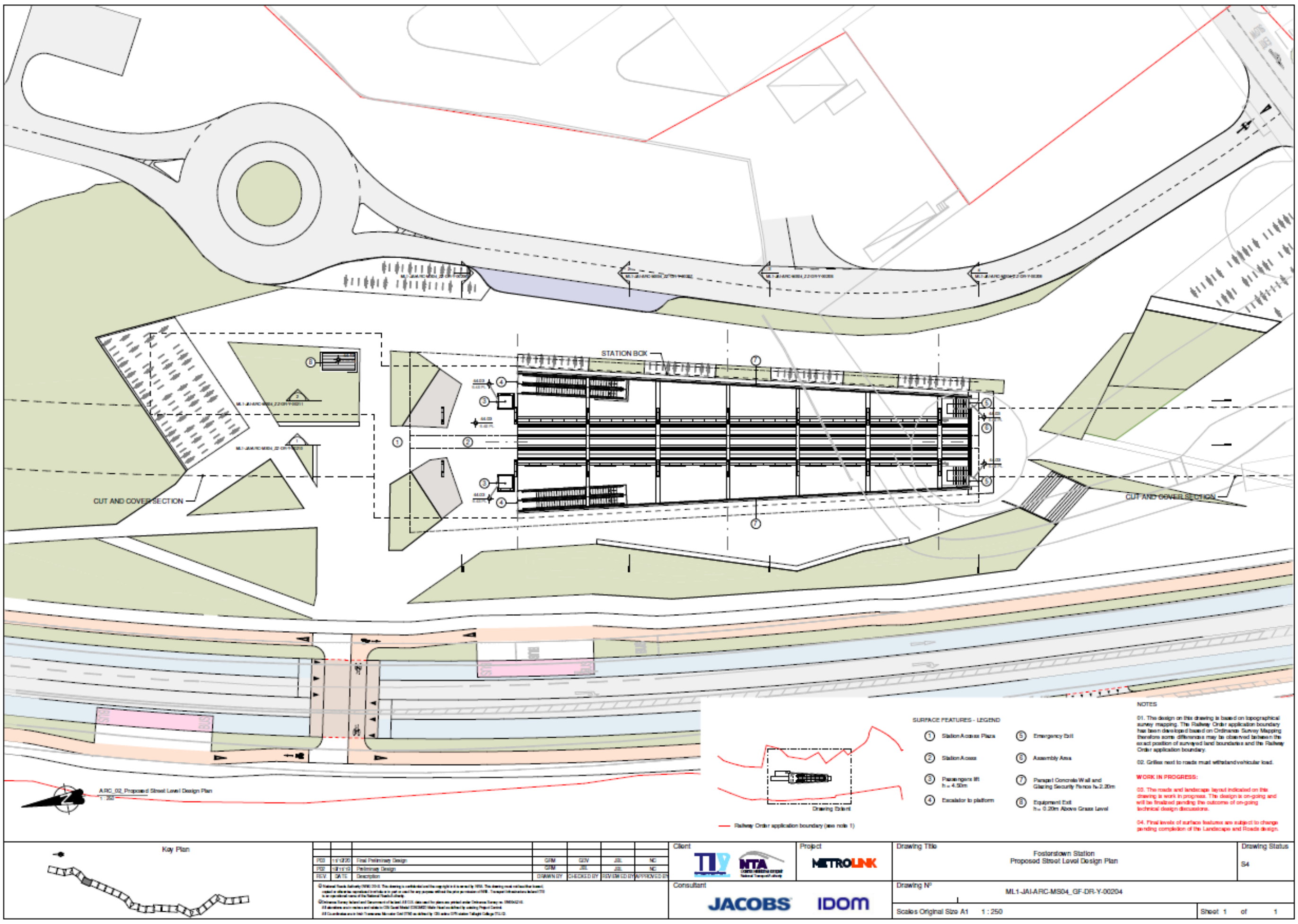


Figure 4.2: Fosterstown Station Layout

5. Trip Generation / Trip Attraction

5.1 Operational Phase

Traffic estimates associated with the Fosterstown Station operational phase will be established by utilising the National Transport Authority's (NTA) East Regional Model (ERM). The ERM provides a comprehensive representation of multi-modal travel patterns across the Greater Dublin Area and is a suitable tool for the testing and appraisal of the proposed Project.

The proposed street level plan for Fosterstown Station provides for a drop-off bay, however a net increase in trips is not expected. In the absence of the R132 Connectivity Study, pedestrian crossings will be provided to the north and east of the station on the R132, causing a minor change to the existing road network.

5.1.1 Passenger Boarding and Alighting

Passenger demand modelling has been used to predict the numbers of passengers boarding and alighting at each station, and the resulting passenger load on the Project, for the years 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). The scenarios considered for assessment for each of the years 2035, 2050 and 2065 are outlined in Table 5.1.

Table 5.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project
Do Minimum Scenario	Committed transport schemes in the absence of the Project
Do Something - Scenario A	Scenario with the Project and committed transport schemes only
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for Opening year (2035) and planned schemes under the Transport Strategy for the GDA for the Design Year (2050) and the Forecast Year (2065)

5.1.1.1 Boarding and Alighting Volumes

Table 5.2 to Table 5.9 show boarding, alighting and interchange numbers for the Fosterstown Station at different peak periods. All data has been retrieved from the ERM developed by the NTA. Data in this section was obtained for the busiest hour within each of the following peak periods:

- AM: busiest hour between 07:00 – 10:00;
- LT (lunch time): busiest hour between 10:00 – 13:00;
- SR (school run): busiest hour between 13:00 – 16:00; and,
- PM: busiest hour between 16:00 – 19:00.

Figure 5.1 presents the volume of boarding and alighting passengers at Fosterstown Station over the 12hr peak period (07:00-19:00) in both Scenario A and Scenario B. Scenario B has the highest volume of both boarding and alighting passengers, reaching approximately 10,600 boarding passengers and 10,200 alighting passengers in 2065, compared to approximately 9,700 boarding passengers and 8,500 alighting passengers in Scenario A 2065.

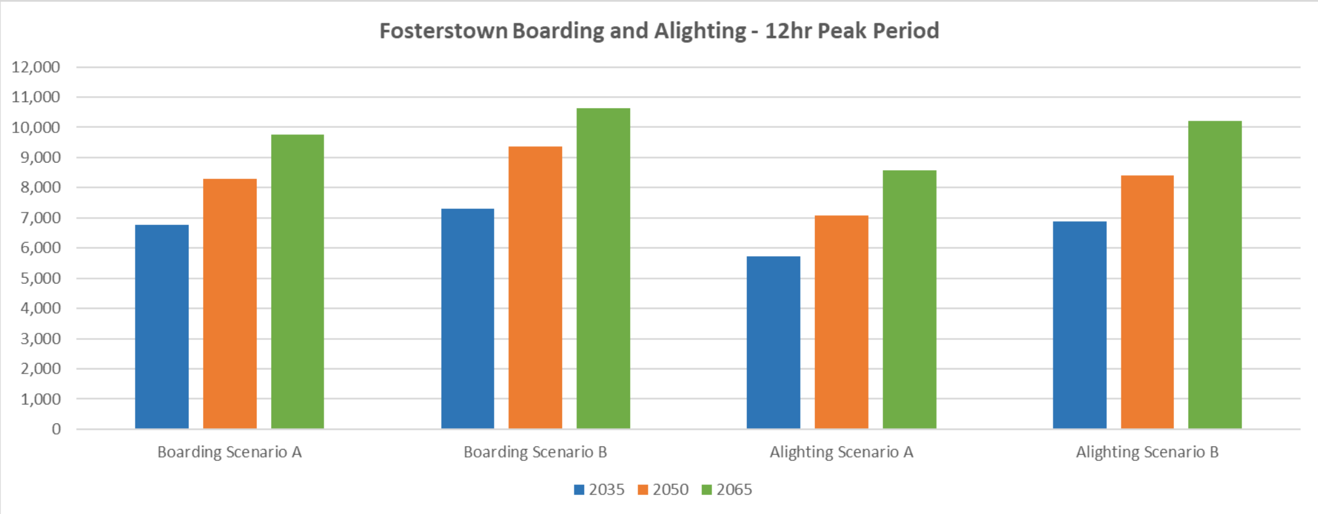


Figure 5.1: Fosterstown 12hr Boarding and Alighting Scenario A and Scenario B

5.1.1.2 Boarding and Alighting Volumes: Scenario A

Table 5.2 to Table 5.4 below highlight the boarding and alighting passenger numbers for Fosterstown Station in Scenario A.

During the Opening Year 2035, it is expected that the highest number of boarding passengers will be 1,959 in the southbound direction during the AM peak. The highest number of passengers alighting at Fosterstown Station will be 1,126 during PM peak in the northbound direction.

Table 5.2: Boarding and Alighting Numbers at Fosterstown Station in 2035 Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	22	328	815	15	235	835	20	460	1,358	51	1,126	3,390
Southbound	1,959	53	6,259	313	15	1,167	208	21	1,032	315	27	1,400

Source: East Regional Model (ERM)

For the year 2050, during the AM peak hour, 2,388 passengers are expected to board the MetroLink vehicles and head south, while 398 northbound passengers are expected to alight. During the PM peak hour, 374 passengers are expected to board the MetroLink vehicles and head south, with 1,375 northbound passengers alighting.

Table 5.3: Boarding and Alighting Numbers at Fosterstown Station in 2050 Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	36	398	1,028	28	290	1,205	17	592	1,436	61	1,375	4,170
Southbound	2,388	51	7,058	390	36	1,828	255	19	1,052	374	38	1,749

Source: East Regional Model (ERM)

For the year 2065, during the AM peak hour, 2,740 passengers are expected to board the MetroLink vehicles and head south. 494 northbound passengers are expected to alight. During the PM peak hour, 463 passengers are expected to board and head south, while 1,633 northbound passengers will alight.

Table 5.4: Boarding and Alighting Numbers at Fosterstown Station in 2065 Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	59	494	1,328	16	356	1,104	13	758	1,532	67	1,633	5,089
Southbound	2,740	52	8,030	478	18	1,542	331	23	1,455	463	55	2,382

Source: East Regional Model (ERM)

5.1.1.3 Boarding and Alighting Volumes: Scenario B

Table 5.5 to Table 5.7 below highlight the boarding and alighting passenger numbers for Fosterstown Station in Scenario B.

For the year 2035, during the AM peak, 2,087 passengers will board the MetroLink vehicles and head south, with 380 northbound passengers alighting. During the PM peak hour, 350 southbound passengers are expected to board while 1,413 northbound passengers will alight.

Table 5.5: Boarding and Alighting Numbers at Fosterstown Station in 2035 Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	29	380	794	22	274	856	35	545	1,509	35	1,413	2,419
Southbound	2,087	40	5,686	320	28	1,322	243	17	1,015	350	25	1,204

Source: East Regional Model (ERM)

It is expected that 2,708 passengers will board the MetroLink vehicles at Fosterstown Station in 2050 and head south and 442 northbound passengers will alight. During the PM peak hour, it is estimated 1,710 northbound passengers will alight and 421 southbound passengers will board.

Table 5.6: Boarding and Alighting Numbers at Fosterstown Station in 2050 Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	45	442	1,027	28	341	1,010	17	670	1,165	86	1,710	4,020
Southbound	2,708	49	7,115	417	40	1,933	299	19	1,201	421	48	1,932

Source: East Regional Model (ERM)

For the year 2065, during the AM peak, 3,129 passengers will board the MetroLink vehicles and head south, with 524 northbound passengers alighting. During the PM peak hour, 469 southbound passengers are expected to board while 2,126 northbound passengers will alight.

Table 5.7: Boarding and Alighting Numbers at Fosterstown Station in 2065 Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	64	524	1,219	28	417	1,290	22	835	1,875	24	2,126	3,106
Southbound	3,129	35	8,920	487	28	1,769	346	15	1,157	469	43	1,467

Source: East Regional Model (ERM)

5.1.1.4 Public Transport Interchange Volumes

As part of the Bus Network Redesign proposals, Fosterstown Station will be served by the A4 Spine route and other local routes, such as the L82, L83 and L85. More information on the future public transport network around the station can be found in Section 3.2 of this document.

Table 5.8 and Table 5.9 present the volumes of passengers transferring to and from MetroLink vehicles with other public transport modes in both Scenario A and Scenario B for both the AM and PM peak hours. The majority of passengers will originate from, or have final destinations in, the surrounding zones, however there is significant interchange with the bus network.

Table 5.8: Transfers To/From Other Public Transport Modes in Scenario A

Scenario A									
Year	Peak	Boarding				Alighting			
		First Boarding	From Bus	From Rail/DART	From Luas	Final Stop	To Bus	To Rail/DART	To Luas
2035	AM	1,001	981	-	-	271	110	-	-
	PM	225	140	-	-	542	611	-	-
2050	AM	1,503	920	-	-	326	122	-	-
	PM	274	161	-	-	701	711	-	-
2065	AM	1,890	909	-	-	406	140	-	-
	PM	336	194	-	-	881	807	-	-

Source: East Regional Model (ERM)

Table 5.9: Transfers To/From Other Public Transport Modes in Scenario B

Scenario B									
Year	Peak	Boarding				Alighting			
		First Boarding	From Bus	From Rail/DART	From Luas	Final Stop	To Bus	To Rail/DART	To Luas
2035	AM	1,362	754	-	-	281	139	-	-
	PM	262	123	-	-	775	663	-	-
2050	AM	1,827	926	-	-	350	141	-	-
	PM	341	166	-	-	1,018	740	-	-
2065	AM	2,298	895	-	-	394	165	-	-
	PM	314	180	-	-	1,258	911	-	-

Source: East Regional Model (ERM)

5.1.1.5 Distribution of Boarding and Alighting Passengers

Figure 5.2 and Figure 5.3 present the origins and destinations of passengers utilising Fosterstown Station during the 2050 AM peak hour. The width of the lines is proportional to the number of commuters arriving at/leaving the station. These figures are utilising the existing pedestrian network, and therefore do not reflect the proposed changes as part of the development of the Fosterstown strategic housing development area to the north-west of the station. When this is complete, the 5min walking isochrone will extend to include this area.

Figure 5.2 illustrates that a large proportion of passengers using Fosterstown Station will travel from the Boroimhe and Ridgewood residential areas situated to the west of the station, within the Fosterstown North locality. Some passengers will also be travelling from the north of the station, from the Pavillions Shopping Centre and the residential area at Carlton Court.

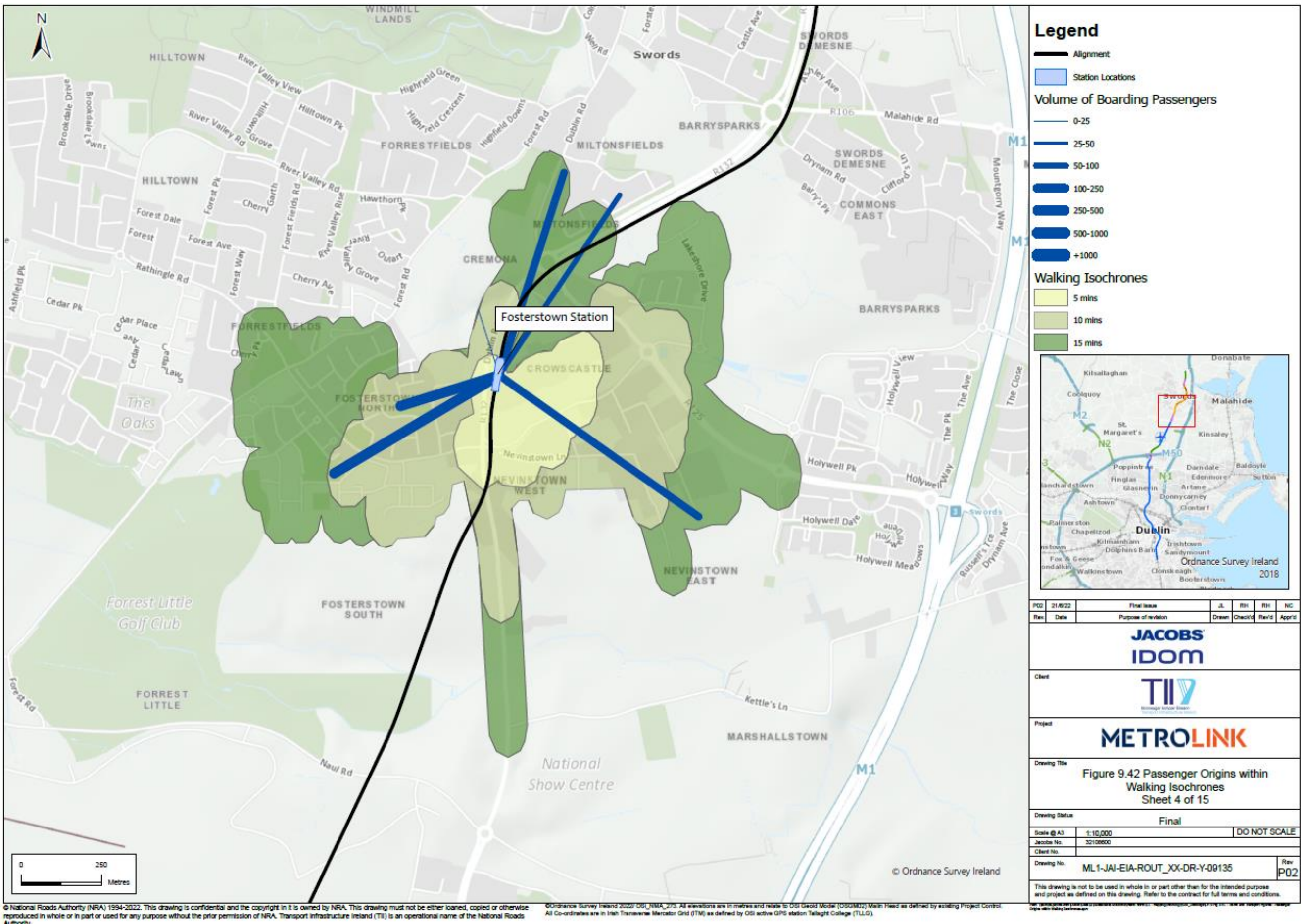


Figure 5.2: Origin of Boarding and Passengers During AM peak hour and Walking Catchment Areas

Figure 5.3 show the destinations of passengers alighting at Fosterstown Station during the 2050 AM peak hour in Scenario A.

The destinations for disembarking passengers in the AM peak are predicted to be predominantly the Pavillions Shopping Centre located to the north of the station. To the south-east of the station, passengers are disembarking and travelling towards the Airside Business Park. Additionally, alighting passengers are predicted to continue their journey in a south-west direction towards the Boroimhe residential area.

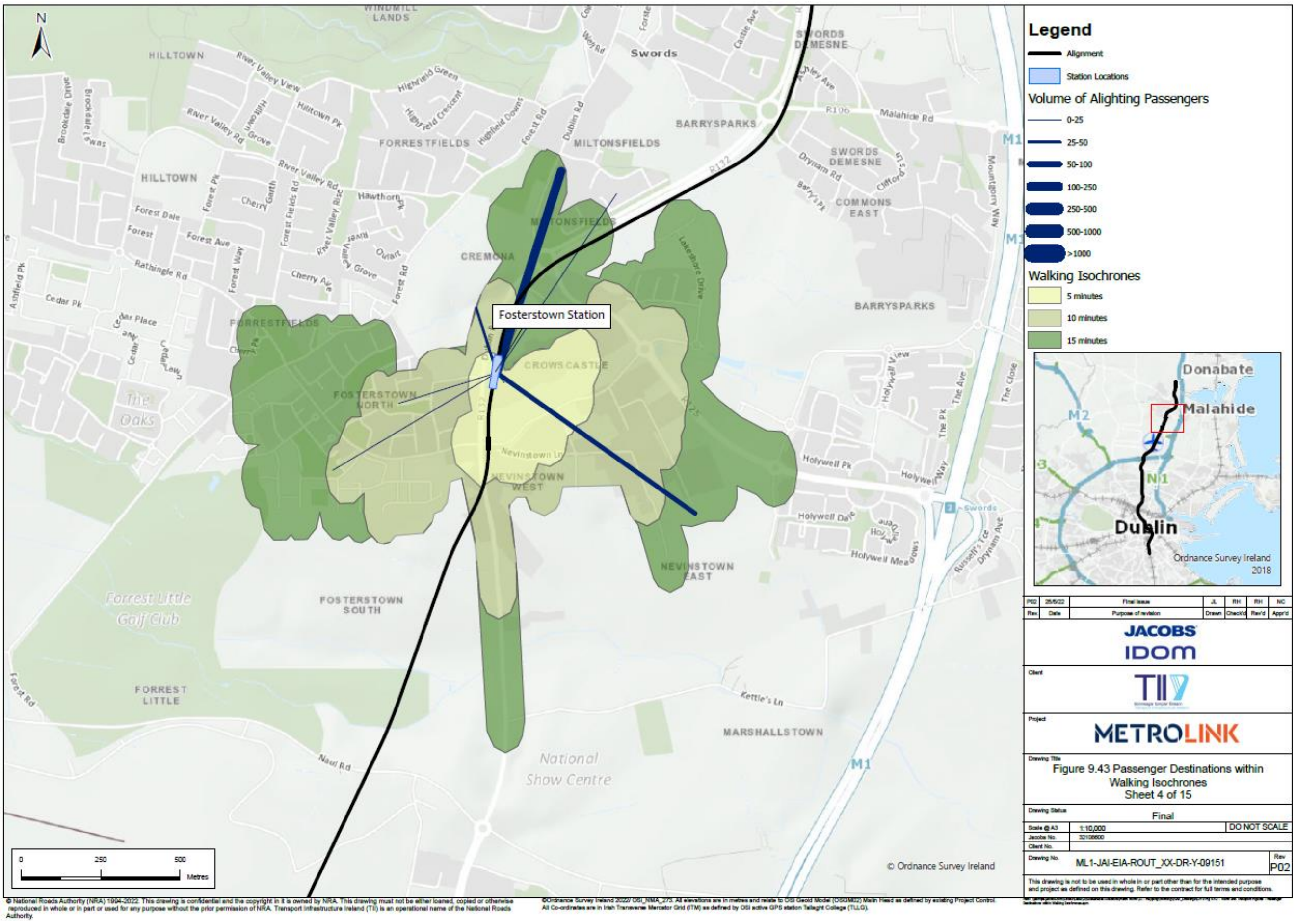


Figure 5.3: Destination for Alighting Passengers During AM peak hour and Walking Catchment Areas

6. Assessment of Impacts

6.1 Operational Phase

As part of the assessment of impacts associated with the Operational Phase of the Project, the impact of the proposed Fosterstown Station on all modes of transport has been assessed – public transport (PT), vehicular traffic, walking and cycling.

6.1.1 Public Transport Assessment

The future street level layout for Fosterstown Station provides for a bus stop on either side of the R132 in the immediate vicinity of the station entrance. A pedestrian crossing is provided to the west of the station access to facilitate safe crossing from this stop. As part of the Bus Network Redesign proposals, the R132 at Fosterstown Station will be served by the A Spine to Dublin City Centre, as well as a number of Local routes and peak only route X84. Boroimhe residential area and the R132 south of Fosterstown station will be served by Other City Bound route 22.

The ERM model has been interrogated in order to estimate the reduction in private car trips associated with the origin and destination trips in the zones around the Fosterstown Station. In Scenario A, there is a 19% increase in total trip demand between 2035 and 2050, with a further 14% increase from 2050 to 2065. Between the Do Minimum and Do Something scenarios, there is a 6 percentage point increase in PT mode share in 2035. In both 2050 and 2065, there is an increase of 7 percentage points in the PT mode share.

Private car mode share decreases by 4 percentage points in 2035, from 61% in the Do Minimum to 57% in the Do Something scenarios. In 2050 and 2065, private car mode share decreases by 5 percentage points.

The active modes mode share (which includes walking and cycling) reduces by 2 percentage points across all three assessment years. Whilst end-to-end active mode trips will reduce, there will be an increase in active mode trips to and from the station where passengers will interchange with the Project. Overall, there is a shift towards sustainable travel modes (active modes and PT combined), and a reduction in private car trip demand at Fosterstown Station.

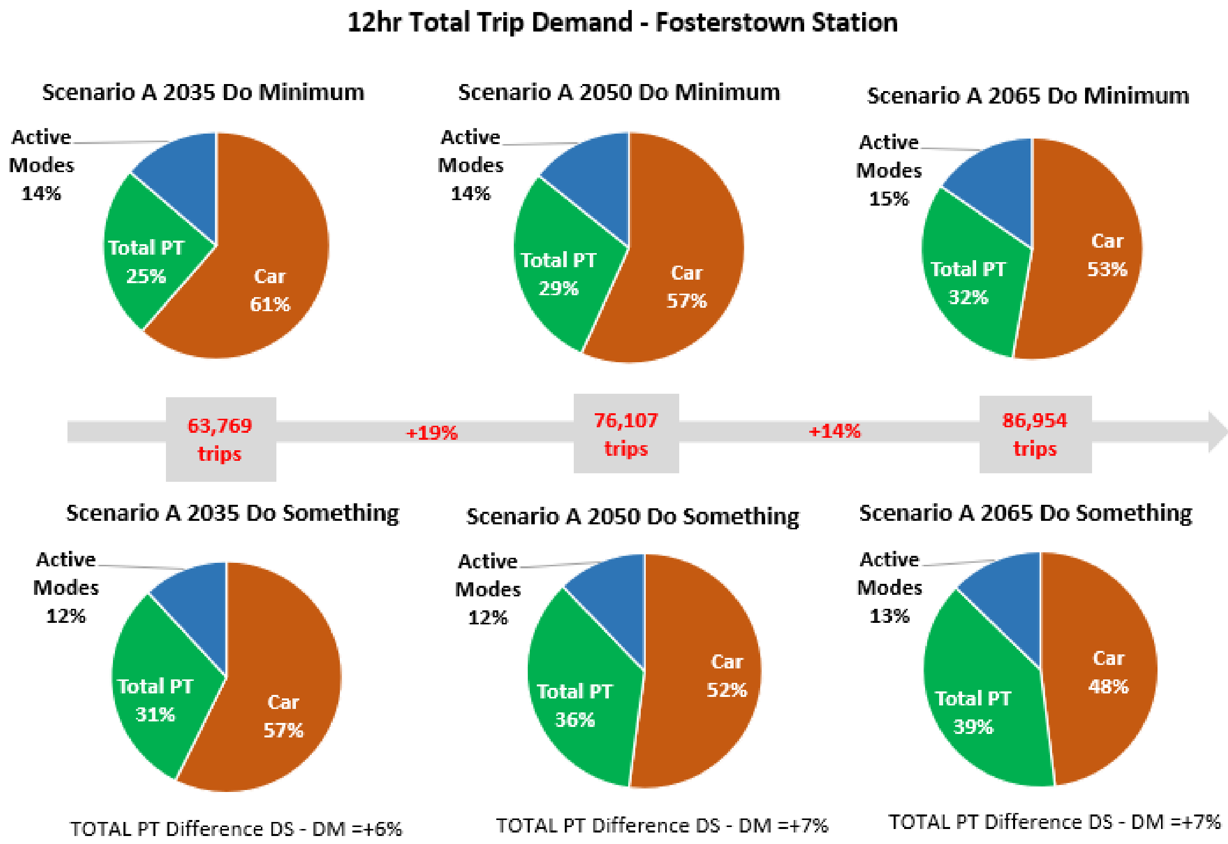


Figure 6.1: Fosterstown Mode Share – Scenario A

In Scenario B, there is a 20% increase in total trip demand between 2035 and 2050, with a further 13% increase from 2050 to 2065. Between the Do Minimum and Do Something scenarios, there is a 5 percentage point increase in PT mode share in 2035. In 2050, there is an increase of 7 percentage points in the PT mode share and in 2065, there is an increase of 6 percentage points in the PT mode share.

Private car mode share decreases by 3 percentage points in 2035, from 60% in the Do Minimum to 57% in the Do Something scenarios. In 2050, private car mode share decreases by 5 percentage points and in 2065, private car mode share decreases by 4 percentage points.

The active modes mode share (which includes walking and cycling) reduces by 2 percentage points across all three assessment years. Whilst end-to-end active mode trips will reduce, there will be an increase in active mode trips to and from the station where passengers will interchange with the Project. Overall, there is a shift towards sustainable travel modes (active modes and PT combined), and a reduction in private car trip demand at Fosterstown Station.

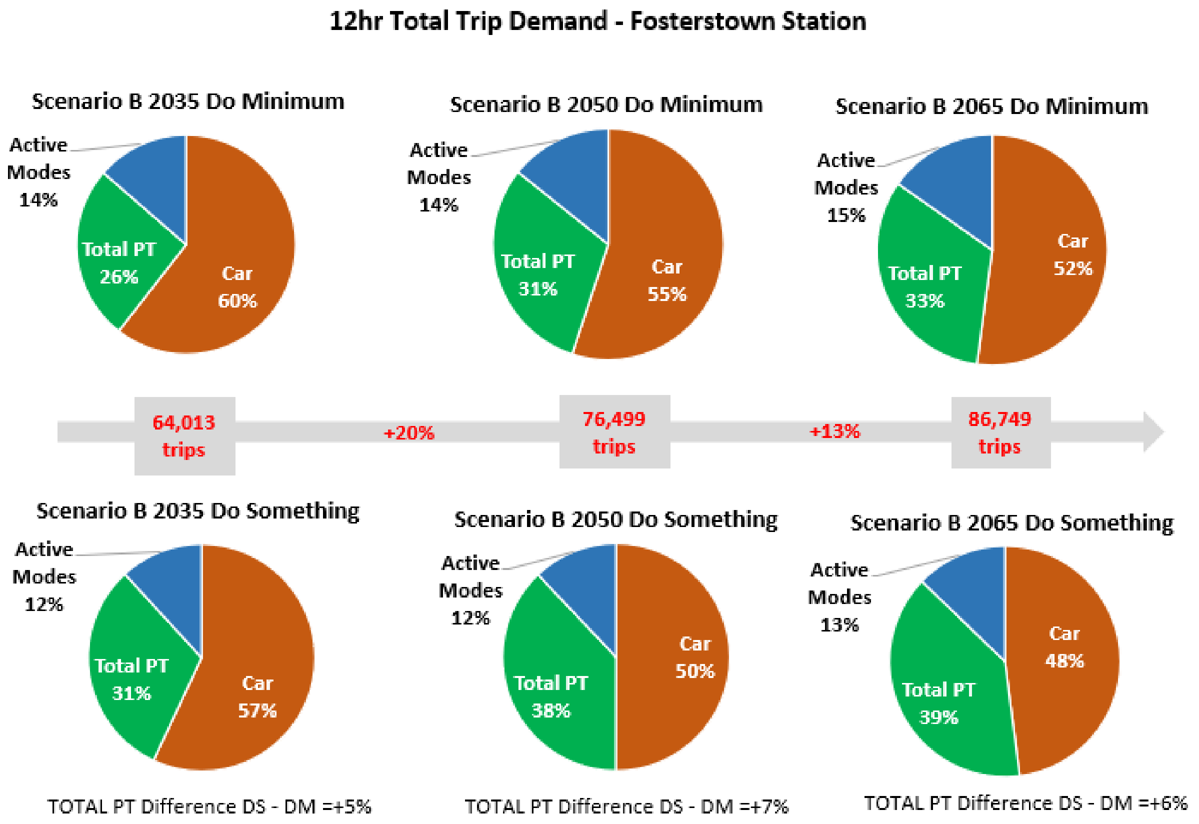


Figure 6.2: Fosterstown Mode Share – Scenario B

Figure 6.3 presents the changes in PT mode share based on Scenario A 2065, with Figure 6.4 presenting the same for Scenario B 2065. In the 2035 AM period, zones to the immediate west of the station (including the Boroimhe and River Valley residential areas) see increases in PT (including the proposed Project) mode share of up to 10 percentage points. Zones to the east of the station see increases in PT (including the proposed Project) mode share of up to 5 percentage points. In the 2050 and 2065 AM periods, the River Valley residential area sees an increase in PT mode share of up to 20 percentage points, as well as the Airside Retail Park zone seeing an increase of up to 5 percentage points in PT mode share in the 2050 and 2065 scenarios.

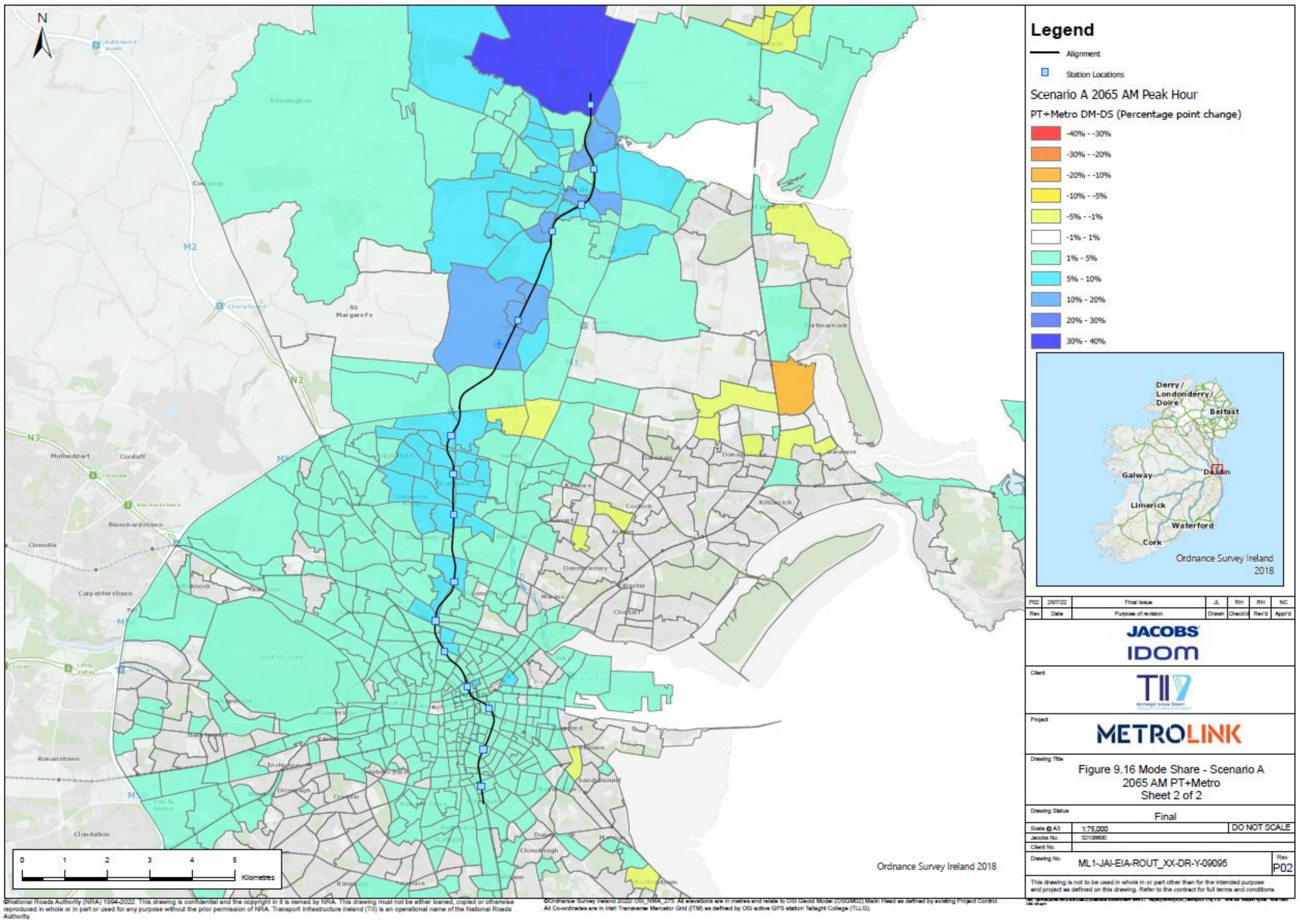


Figure 6.3: Changes in Public Transport Mode Share (including the Project) in Scenario A 2065 AM Peak Hour

In Scenario B, in the 2035 AM period, zones to the immediate west of the station (including the Boroimhe and River Valley residential areas) see increases in PT (including the proposed Project) mode share of up to 20 percentage points. Zones to the east of the station see increases in PT (including the proposed Project) mode share of up to 5 percentage points. In the 2050 and 2065 AM periods, the River Valley residential area sees an increase in PT mode share of up to 20 percentage points, as well as the Airside Retail Park zone seeing an increase of up to 10 percentage points in PT mode share in the 2050 scenario and 5 percentage points in PT mode share in the 2065 scenario.

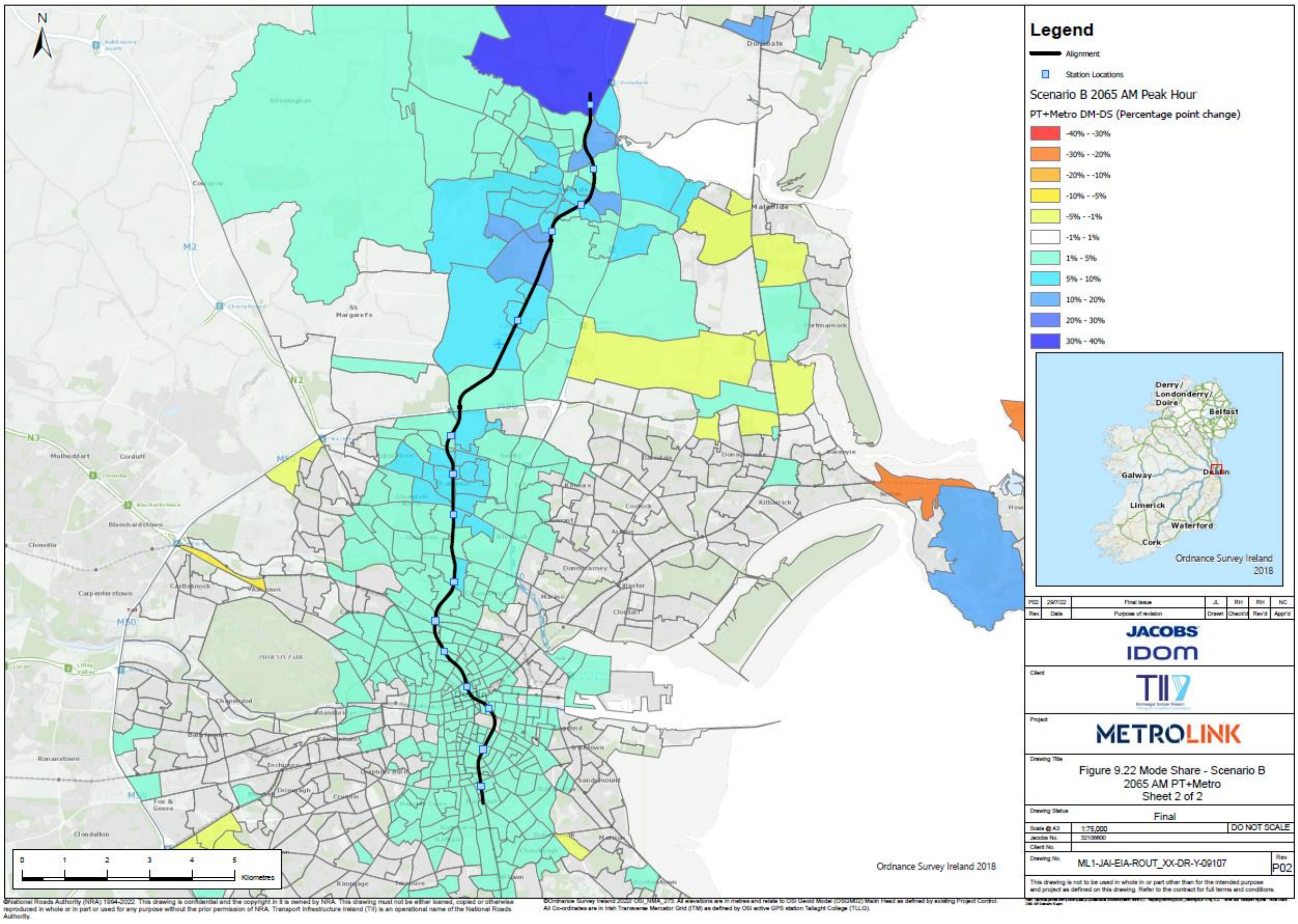


Figure 6.4: Changes in Public Transport Mode Share (Including the Project) in Scenario B 2065 AM Peak Hour

End-to-end public-transport-only journey time comparisons between Do Minimum and Do Something scenarios, including interchange between the Project vehicles and other public transport modes, have been undertaken to investigate benefits to journey time with the proposed Project in place in both Scenario A and Scenario B. The assessments were carried out for zones located across the city as illustrated in Figure 6.5 and Table 6.1. These zones have been identified using local knowledge of population settlements and trip attractors.

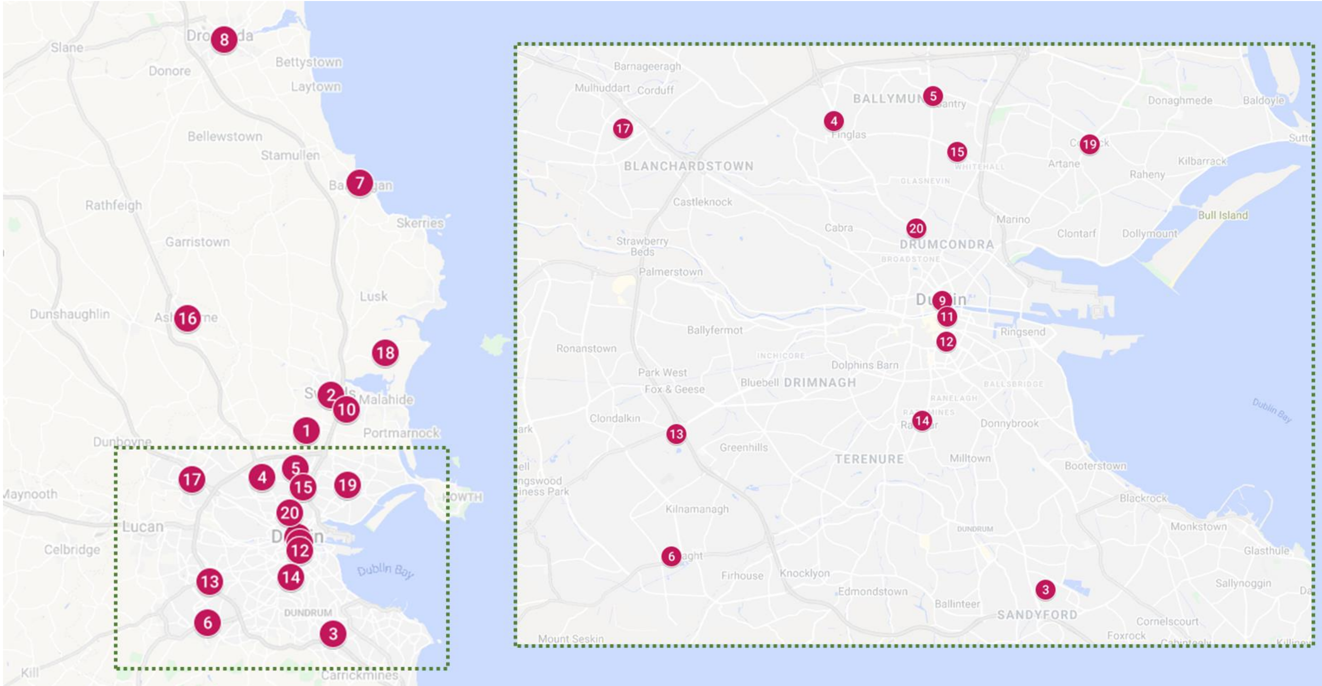


Figure 6.5: Zones assessed for public transport journey time

Table 6.1: Zones assessed for public transport journey time

Nb	Location	Nb	Location	Nb	Location	Nb	Location
1	Dublin Airport	**6**	Tallaght	**11**	College Street	**16**	Ashbourne
2	Swords Pavilion	**7**	Balbriggan	**12**	St. Stephen's Green	**17**	Blanchardstown
3	Sandyford	**8**	Drogheda	**13**	Red Cow	**18**	Donabate
4	Finglas	**9**	O'Connell Street	**14**	Rathgar	**19**	Coolock
5	Ballymun	**10**	Sword East	**15**	DCU	**20**	Glasnevin

For the purposes of the journey time analysis, Fosterstown Station is located within the Swords Pavilions zone / area.

In Scenario A, the following changes to journey times are observed:

- The most significant journey time savings from the Swords Pavilions area would be to the Glasnevin area, of approximately 48 minutes in the 2035, 2050 and 2065 AM periods. This is a reduction of over 60% compared to the Do Minimum scenario.
- Public transport journeys from the Swords Pavilions area to other areas in north Dublin, such as the Blanchardstown area, will see savings of approximately 31 minutes in the 2035 AM period and rising to 34 minutes in the 2065 AM period; and to Dublin Airport, savings of approximately 16 minutes in the 2035, 2050 and 2065 AM periods, which is a reduction of approximately 50% compared to the Do Minimum scenario.
- Public transport journeys from the Swords Pavilions area to key Dublin City Centre locations such as O'Connell Street and St Stephen's Green will see savings of between 20 and 24 minutes in the 2035, 2050 and 2065 AM periods when the proposed Project is in place.
- Public transport journeys from the Swords Pavilions area to areas in south Dublin, such as Sandyford, will see savings of approximately 30 minutes in the 2035, 2050 and 2065 AM periods.

In Scenario B, the following changes to journey times are observed:

- The most significant journey time savings from the Swords Pavilions area would be to the Glasnevin area, of approximately 28 minutes in the 2035 AM period, and 42 minutes in the 2065 AM period. This is a reduction of nearly 50% in 2035 and nearly 60% in 2065 compared to the Do Minimum scenarios.
- Public transport journeys from the Swords Pavilions area to other areas in north Dublin, such as the Blanchardstown area, will see savings of approximately 26 minutes in the 2035 AM period and rising to 35 minutes in the 2065 AM period; and to Dublin Airport, savings of approximately 10 minutes in the 2035, 2050 and 2065 AM periods, which is a reduction of approximately 40% compared to the Do Minimum scenario.
- Public transport journeys from the Swords Pavilions area to key Dublin City Centre locations such as O'Connell Street and St Stephen's Green will see savings of between 21 and 30 minutes in the 2035, 2050 and 2065 AM periods when the proposed Project is in place.
- Public transport journeys from the Swords Pavilions area to areas in south Dublin, such as Sandyford, will see savings of approximately 27 to 32 minutes in the 2035, 2050 and 2065 AM periods.

6.1.2 Traffic Impact Assessment

The future street level layout at Fosterstown Station provides for a drop-off area to the east of the station entrance, to be accessed via the R125, with an estimated usage of 2 drop-off passengers per train. The drop-off area will integrate with the future public realm between the future station and Airside Retail Park.

Analysis of car mode share is presented on the basis of Scenario A. In the 2035 AM, the zones to both the east and west see reductions in private car mode share of up to 5 percentage points. In 2065, the River Valley residential area sees private car mode share reduce by up to 5 percentage points when the proposed Project is in place. The Airside Retail Park zone, to the east, sees a reduction in private car mode share of up to 5 percentage points in the 2035, 2050 and 2065 AM periods.

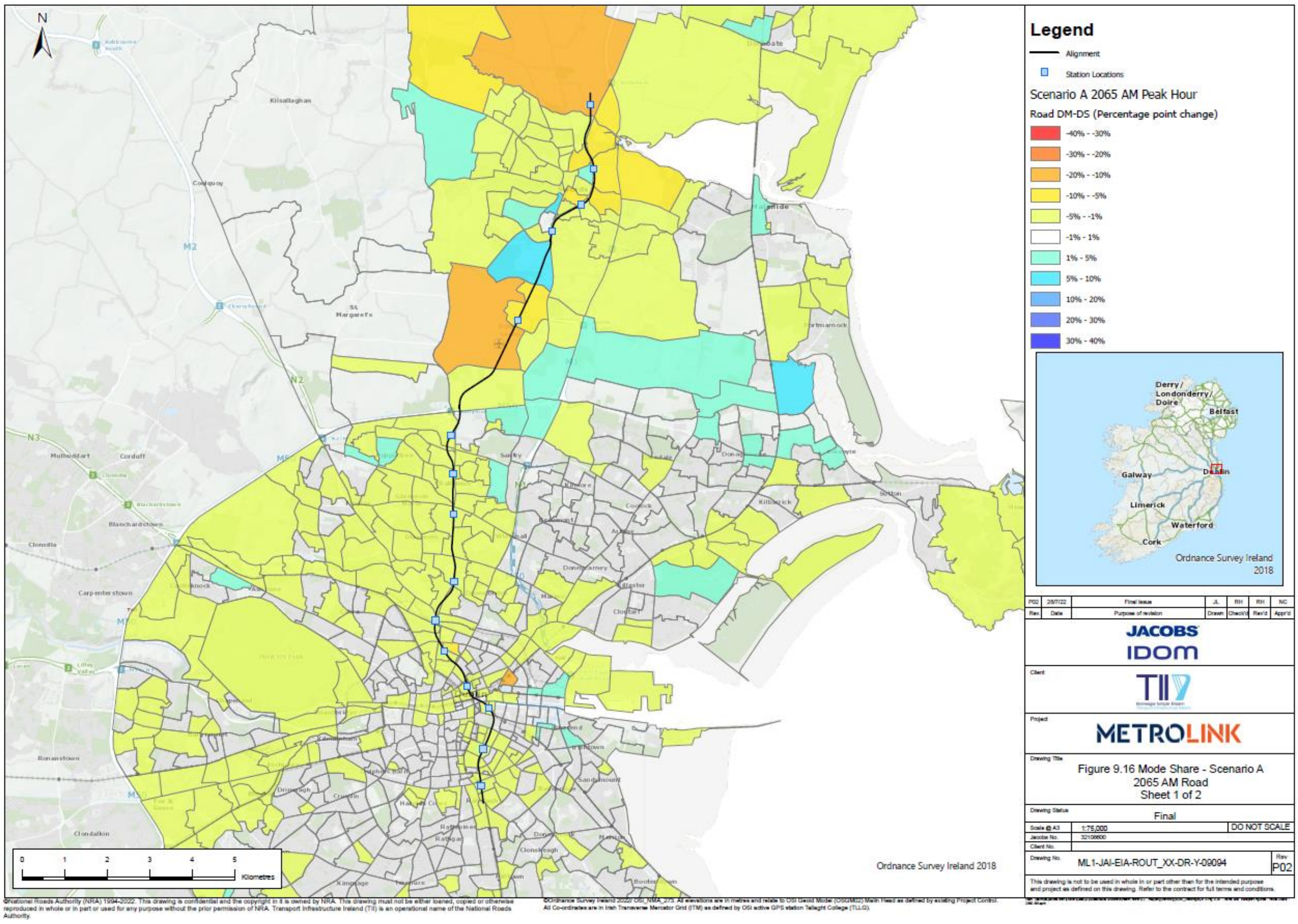


Figure 6.6: Changes in Car Mode Share in Scenario A 2065 AM Peak Hour

In Scenario B, in the 2035 AM, the zones to both the east and west see reductions in private car mode share of up to 5 percentage points. In 2065, the River Valley residential area sees private car mode share reduce by up to 10 percentage points when the proposed Project is in place. The Airside Retail Park zone, to the east, sees a reduction in private car mode share of up to 5 percentage points in the 2035 and 2050 AM periods, with a negligible change in the 2065 AM period.

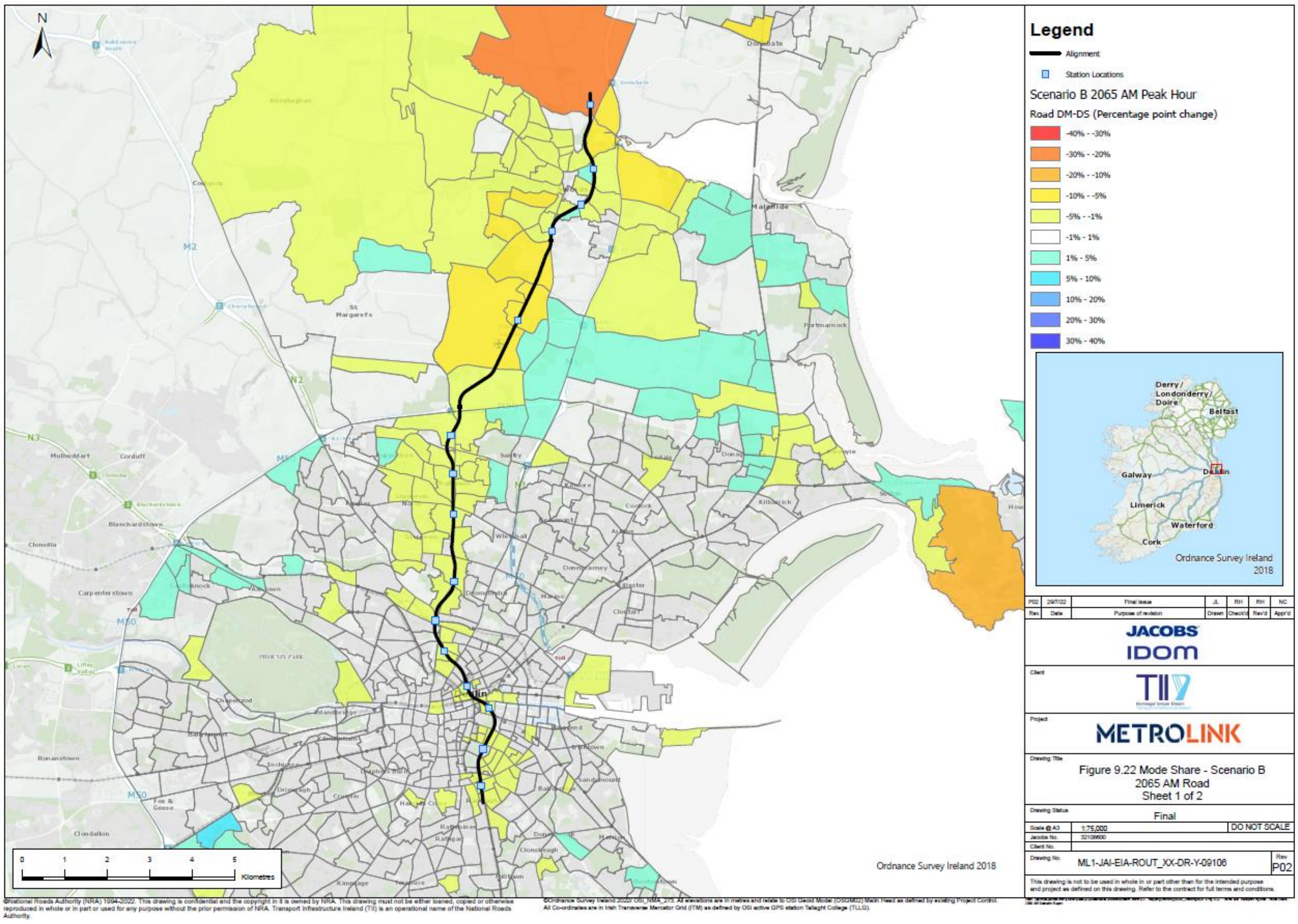


Figure 6.7: Changes in Car Mode Share in Scenario B 2065 AM Peak Hour

Over the 12hr period, the zones within a 2km radius of Fosterstown Station see a reduction of over 2,100 car trips between the Scenario A 2035 Do Minimum and Do Something scenarios, reaching a reduction of over 3,000 trips in Scenario A 2050. In 2065, there is a reduction of 3,600 car trips between the Do Minimum and Do Something scenarios. In Scenario B, these zones see a reduction of over 1,800 car trips between the 2035 Do Minimum and Do Something scenarios, increasing to a reduction of 3,100 car trips in both 2050 and 2065.

6.1.3 Pedestrian Impact Assessment

The future street level layout of Fosterstown Station provides for footways of approximately 2m on both sides of the R132. A pedestrian crossing will also be provided on the R132 to the west of the station access to facilitate safe crossing from the bus stop on the western side of the R132.

An assessment of the pedestrian provision around the station has been undertaken, in order to confirm its robustness in catering for the additional demand associated with the proposed project. The assessment comprises of a 'Footway Comfort Assessment', which predicts the pedestrian comfort levels based on industry guidance, taking cognisance of factors including pedestrian demand and footway width. The full methodology adopted is detailed in the Overall Project TTA.

The Scenario A 2050 design year was assessed, with Scenario A 2065 also assessed as the 'worst-case scenario' for passenger numbers, as this scenario has the highest volume of total AM passenger demand in the future year between both Scenario A and Scenario B (almost 61,000 AM boarding passengers across the alignment in Scenario A, compared to almost 55,000 AM boarding passengers in Scenario B). At all stations, the passenger demand in the AM peak hour is lower in Scenario B than in Scenario A, with the exception of Fosterstown Station where there is a 12% increase in Scenario B. As such, Scenario B has not been assessed, with the exception of Fosterstown Station to ensure that all possible significant impacts are accounted for.

As there are minimal volumes of pedestrians in this location in the baseline scenario, no baseline assessment was undertaken. However, with the implementation of the Project, improvements will be made to the network, facilitating pedestrian movements to and from the station. As the station lies within Fingal County Council, the guidance of Dublin City Council does not apply, however TfL Pedestrian Comfort Level assessments have been carried out.

The assessment finds that most footway provisions around Fosterstown Station are deemed 'Comfortable' for pedestrians, however the R132 Swords Bypass at Fosterstown Station is deemed 'Acceptable', whilst the L2300 Boroimhe Road is considered 'Uncomfortable'. The same results can be seen in 2065 Scenario A, resulting in a negative impact in both the design and future year scenarios. Possible mitigation measures for these significant impacts includes possible reallocation of space, as well as the consideration of the placement of street furniture to maximise available width. Reallocation of the current grass verges at this location would allow for an increase of total footway width to 4m, which would give an 'Acceptable' comfort level.

The pedestrian assessment does not account for the future footway network that may be present when the Fosterstown housing development is in place, which may also reduce the impact on this link.

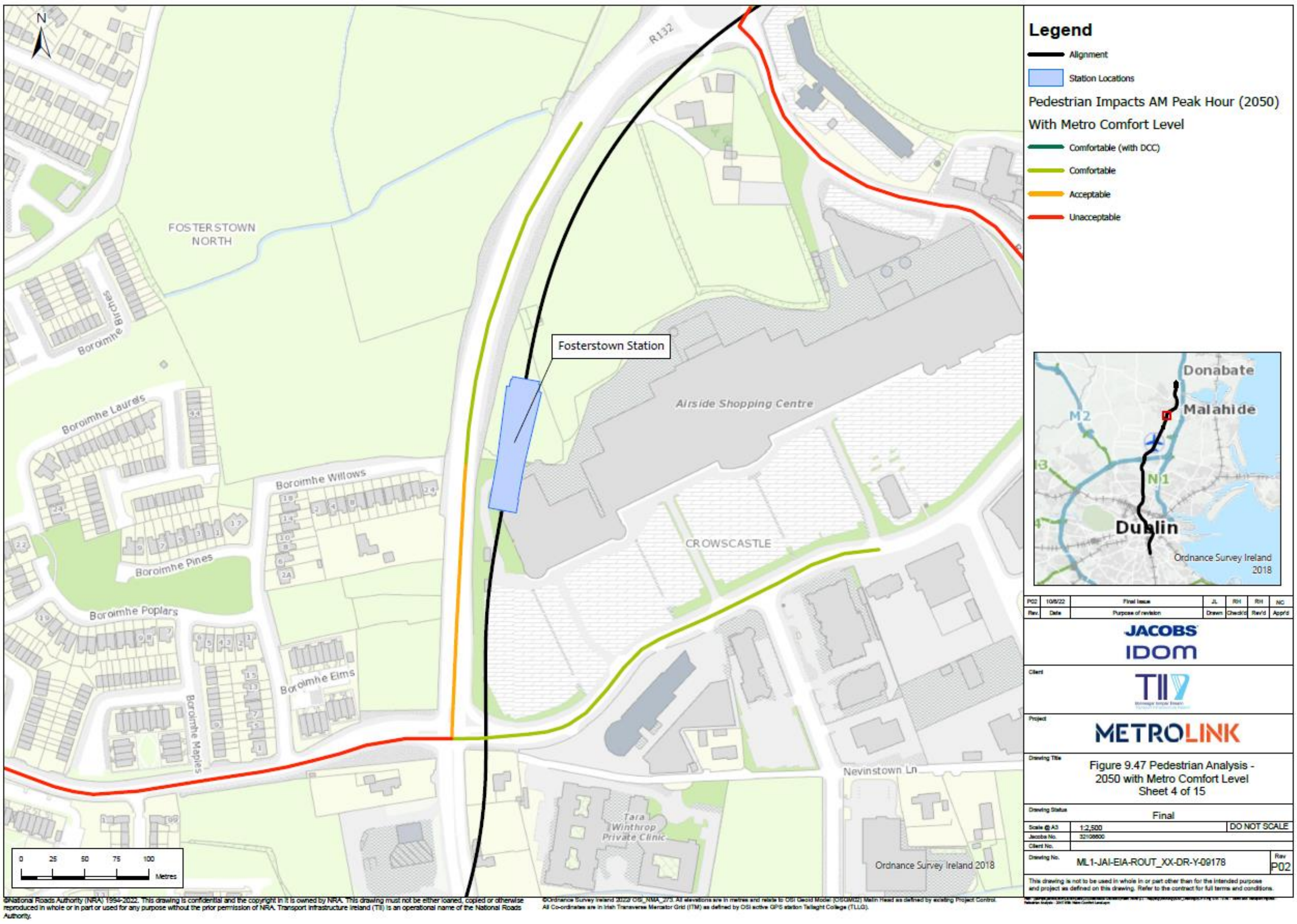


Figure 6.8: Pedestrian Comfort Assessment with the Project 2050 Scenario A

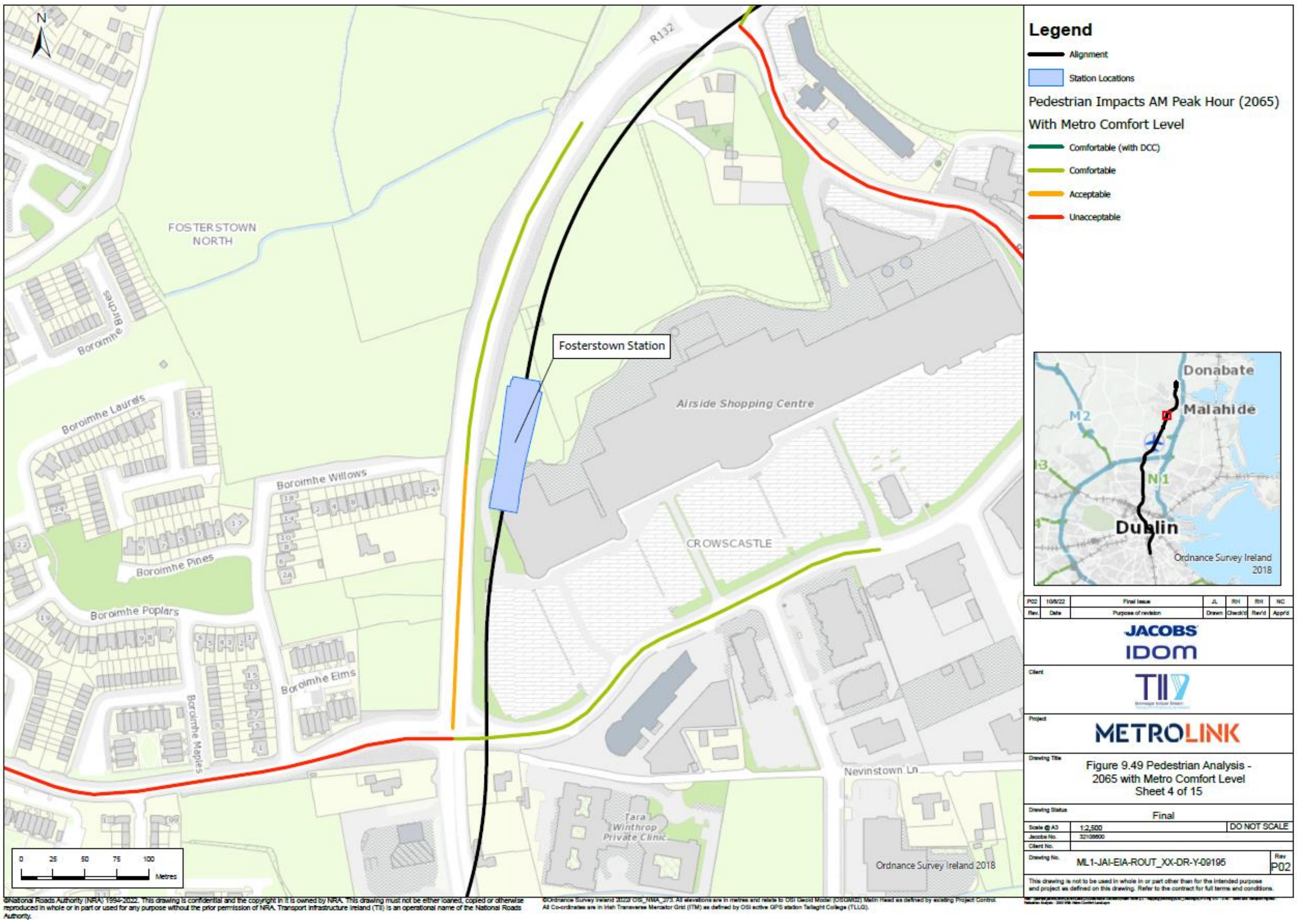


Figure 6.9: Pedestrian Comfort Assessment with the Project 2065

Fosterstown Station is the only station along the alignment which has a higher AM passenger demand in Scenario B 2065 than in Scenario A 2065 (there is a 12% increase in Scenario B). To ensure no significant impacts have been missed in the assessment, a pedestrian comfort assessment of the Scenario B 2065 demand has been undertaken at Fosterstown station only. The assessment finds that the R132 Swords Bypass in the vicinity of the station has an ‘Unacceptable’ comfort level (PCL D), and therefore this is a long-term, Significant, negative impact of the Project in comparison with the baseline conditions. The L2300 Boroimhe Road also has an ‘Unacceptable’ comfort level, however this is the same in the Scenario A.

6.1.4 Cyclist Impact Assessment

The future street level layout for Fosterstown Station provides for a 2m one-way cycle lane on both sides of the R132 within the Red Line Boundary. The provision of the bus lay-by obstructs the flow of the bus lane, and therefore has a Level B Quality of Service. Bicycle access to the station will be facilitated by an at grade cycle crossing over the R132.

A methodology has been applied to determine the potential demand for cycle parking at each of the stations. This methodology utilises the number of boarding and alighting passengers, the distance of origins/destinations from the station, and the location of the station. The passenger demand from an earlier Opening Year has been utilised to determine the potential cycle demand in the Opening Year, and in the Opening Year +5 Years.

This approach has informed the design and the number of cycle parking spaces provided at each station. Other factors such as the availability of land, potential future land uses and parking supply, and the location of the station have also been taken into consideration by the design team in determining the quantum of cycle parking spaces provided.

For the Fosterstown Station, a total of 422 cycle spaces are proposed.

6.1.5 Road safety

A Stage 1 Road Safety Audit has been undertaken for all of the proposed highway works for the Project. This is under a separate cover.

7. Summary

The Fosterstown Station will facilitate approximately 14,100 passenger movements over the 12hr peak period (07:00-19:00) in Scenario B in 2035, rising to approximately 17,700 in 2050 and over 20,800 in 2065.

The main catchment origins and destinations of the people boarding and alighting at the Fosterstown Station will be:

- Origins from Boroimhe residential area;
- Origins from River Valley residential area;
- Destinations at Swords Pavillions Shopping Centre; and
- Destinations at Airside Business Park.

In Scenario A, the Project will result in increases in public transport mode share of up to 10 percentage points for the zones to the west of the proposed station, including Boroimhe and River Valley residential areas. Alongside this, in the 2035 AM, the zones to both the east and west see reductions in private car mode share of up to 5 percentage points. In 2065, the River Valley residential area sees private car mode share reduce by up to 5 percentage points when the proposed Project is in place. Overall, the zones surrounding Fosterstown Station see a reduction of approximately 3,600 car trips to and from the zones surrounding Fosterstown Station in Scenario A 2065 over the 12hr period. In Scenario B 2065, there is a reduction of 3,100 car trips between the Do Minimum and Do Something scenarios over the 12hr period.

The Project will result in improvements to the public transport journey times for people in the area, such as a saving of approximately 50 minutes for journeys from Swords Pavillions to Glasnevin in Scenario A AM period, and reductions of up to 24 minutes from the Swords Pavilions Area to Dublin City Centre locations such as O'Connell Street and St. Stephen's Green in the Scenario A AM periods.

The station will also provide for 422 cycle parking spaces. The pedestrian comfort assessment finds that most footway provisions around Fosterstown Station in 2050 are deemed 'Comfortable' for pedestrians, however the R132 Swords Bypass at Fosterstown Station is deemed 'Acceptable', whilst the L2300 Boroimhe Road is considered 'Uncomfortable'. The same results can be seen in 2065, resulting in a negative impact in both the design and future year scenarios. Possible mitigation measures for these significant impacts includes possible reallocation of space, as well as the consideration of the placement of street furniture to maximise available width. Reallocation of the current grass verges at this location would allow for an increase of total footway width to 4m, which would give an 'Acceptable' comfort level.

In overall terms, the Fosterstown Station will provide for improvements to the public transport network resulting in decreases in private car usage/trips, increases in public transport usage/trips and will facilitate walking and cycling to the station, without significantly impacting on the operation of the road network in the area.

Contents

1. Introduction

1.1 Background

Jacobs/IDOM has been commissioned to undertake the Environmental Impact Assessment Report (EIAR) in support of the proposed Dublin MetroLink project (hereafter referred to as the Project). The EIAR is being prepared to assess the environmental impacts of the Project, including in relation to traffic and transport.

This Traffic and Transportation Assessment (TTA) assesses the operational impacts associated with the Dublin Airport station on the Traffic and Transport network in the local area. TTA's have been prepared for each individual station as well as an overall TTA for the Project.

Jacobs/IDOM has also been commissioned to undertake a scheme traffic management plan (STMP). The STMP is a standalone report within the EIAR. The STMP assesses the impact of the construction of the Project on all road users and proposes mitigation measures where appropriate.

A summary of the TTAs and STMP will be included within the Traffic and Transportation chapter of the EIAR.

1.2 Assessment Scenarios

In order to provide a rounded assessment of the Project, its impacts have been reviewed for a range of future years, and in the context of two alternative future scenarios. The forecast years are 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). As outlined in Table 1.1, Scenario A includes the Project and committed transport schemes only, while Scenario B includes a range of further planned schemes depending on the forecast year.

Table 1.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project
Do Minimum Scenario	Committed transport schemes in the absence of the Project
Do Something- Scenario A	Scenario with the Project and committed transport schemes only.
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for Opening year (2035) and planned schemes under the Transport Strategy for the GDA for the Design Year (2050) and the Forecast Year (2065)

Committed transport schemes in the Do Minimum scenario and in Scenario A, that have been progressed through planning and are either under construction or are programmed into the capital expenditure budget, include, but are not limited to:

- Luas Green Line Capacity Enhancement- Phase 1;
- BusConnects Dublin Area Network Redesign; and,
- Bus Connects Fares and Ticketing.

Scenario B represents the likely future receiving environment and is based on the delivery of the schemes identified within the National Development Plan for 2035, and on the implementation of the NTA's Greater Dublin Area (GDA) Transport Strategy for 2050 and 2065. As such, this scenario considers the cumulative impacts of interactions between other projects that are most likely to impact on transport movements in the area. Schemes included in this scenario are, but are not limited to:

- Luas Green Line Capacity Enhancement- Phase 2;
- Luas Finglas;
- Luas Lucan;
- BusConnects Core Bus Corridors (planned 16 corridors); and
- DART+.

More information on each modelled scenario is available in the Transport Modelling Plan (Appendix A9.3).

1.3 Project Overview

The Project will be a high-capacity, high frequency rail line running from Swords to Charlemont, linking Dublin Airport, Irish Rail, the Dublin Area Rapid Transit (DART), Dublin Bus and Luas services, improving integration across public transport network in the Greater Dublin Area (GDA).

As well as linking major transport hubs, the proposed Project will connect key destinations including Swords, Ballymun, the Mater Hospital, the Rotunda, Dublin City University and Trinity College with much of the 19-kilometre route running underground.

When operations commence, there will be a service every 3 minutes during peak periods. This can rise to a service every 90 seconds, with the system capable of carrying a peak line flow of 20,000 passengers per hour in each direction.

1.3.1 Dublin Airport Station

The Dublin Airport Station is an underground station located under what is now the Terminal 2 (T2) surface car park, between Terminal 1 and Terminal 2, shown in Figure 1.1. Dublin Airport Station will offer a strategic connection for air passengers to areas within Dublin City Centre. The access to this station will be located on the portion of the car park that is closest to the terminal building for quicker access.

Terminal 2 car park will be redesigned to accommodate station infrastructure such as ventilation shafts and emergency accesses and will incorporate provision for new coach parking off a public plaza, facilitating passenger interchange between bus, metro and Dublin Airport. The design includes 20 bus bays which will connect with the new road to tie into the existing road network along the existing bus bays in front of the Terminal 1.

Parking for 72 cycles is provided and links to the existing cycle network around the airport road. Appropriate pedestrian connectivity is provided to Terminal 1 and Terminal 2 buildings from the station by means of a pedestrian crossing and path.

Interchange facilities include a number of the proposed BusConnects routes, such as Spine routes A2 and A4, as well as local routes. No further drop-off or taxi facilities are proposed for the station given the existing provisions at Dublin Airport.

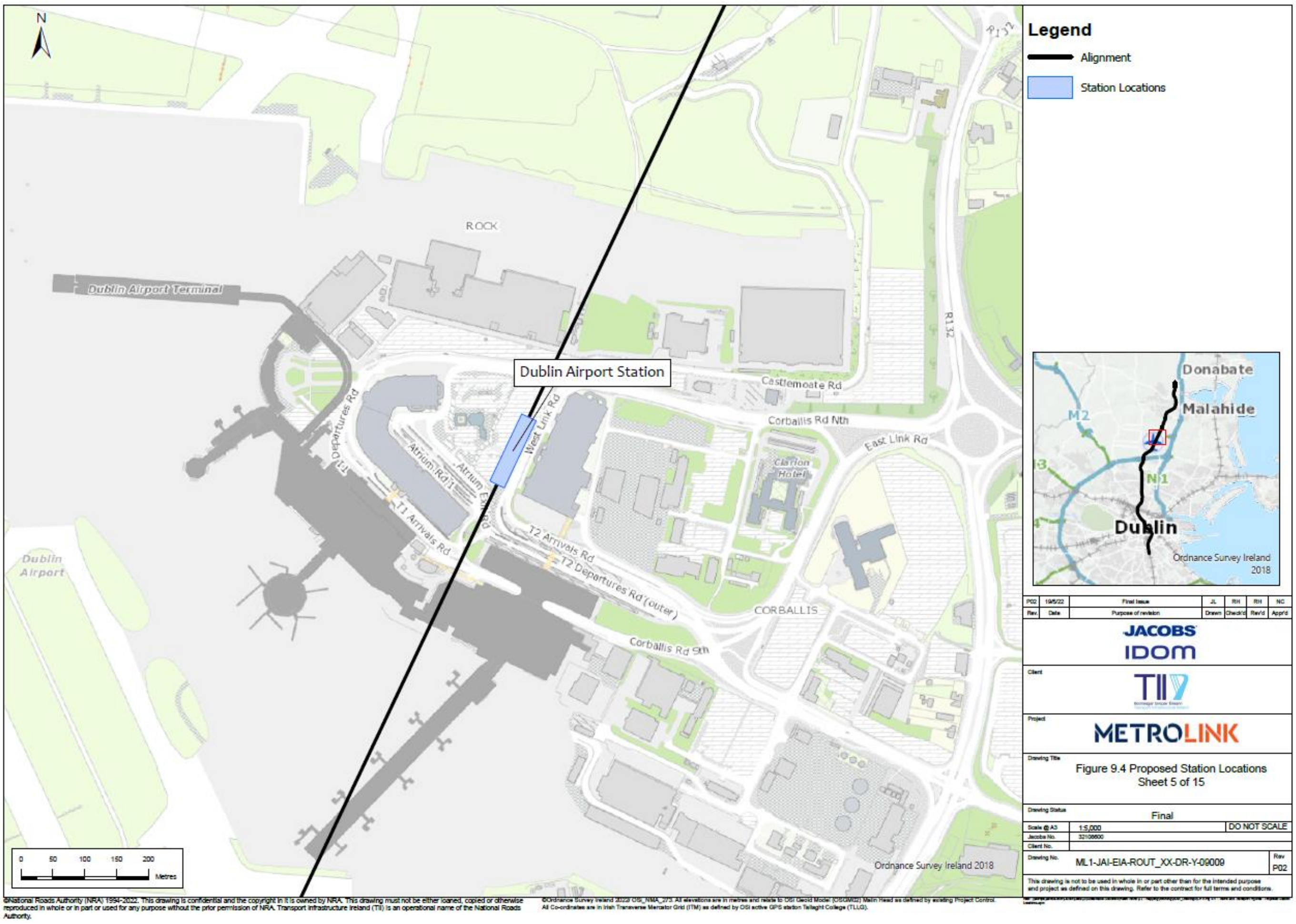


Figure 1.1: Proposed Station Location of Dublin Airport Station

2. Policy Context

Reference should be made to Chapter 3 of the Overall Project TTA and Planning Policy Report (ML1-JAI-PLD-ROUT_XX-RP-Y-00020) for further detail on the overall project in relation to key national and regional policies.

This section will focus on an assessment of the Dublin Airport Station proposals in relation to the following key local policies:

- Dublin Airport Central Masterplan;
- Dublin Airport Local Area Plan;
- Fingal County Council Development Plan (2017 – 2023);
- Draft Fingal County Council Development Plan (2023-2029);
- Dublin Airport Local Area Plan (Fingal County Council, 2020); and
- South Fingal Transport Study.

The National Spatial Strategy states that in order to promote sustainable development, it is essential to consolidate the physical growth of Dublin City. This should be supported by effective land use policies for the urban area which underpin increased investment in high quality public transport infrastructure. It outlines a number of requirements that are key to creating a compact and economically vibrant city including:

- The effective integration of land use and transportation policy: and
- Facilitating the movement of people and goods through an effective public transport system.

The Regional Planning Guidelines promote the consolidation of development within the metropolitan area, and the achievement of sustainable densities in tandem with a much-enhanced multi-modal transport system.

Greater Dublin Area Draft Transport Strategy 2011-2030 “2030Vision” The Strategy identifies key transport principles that are important to quality of life:

- Strong focus on pedestrian and cycling movement for local trips,
- Exploring the ability of public transport to cater for the mass,
- Movement of people while using a fraction of the fuel and street space required for cars,
- Balancing the demand for car travel with other modes so that walking, and cycling are the dominant modes and public transport is dominant for longer trips,
- Increasing connectivity and permeability, to make walking and cycling more appealing.

2.1 Dublin Airport Central Masterplan (Fingal County Council, 2016)

The Dublin Airport Central Masterplan (Fingal County Council, 2016) is a framework for the future development of lands strategically located adjacent to Dublin Airport. The lands associated with the masterplan comprise of two zones, referred to as zone 1 and zone 2. The masterplan focuses on the development of zone 1 for high quality, high value office accommodation supplemented with ancillary uses. The delivery and implementation of the development framework for the lands will be achieved in a gradual manner and will be linked to key infrastructural requirements and service supports including road network, public transport network and water service improvements. Plans included in the Masterplan make provisions for the location of the MetroLink stop at Dublin Airport.

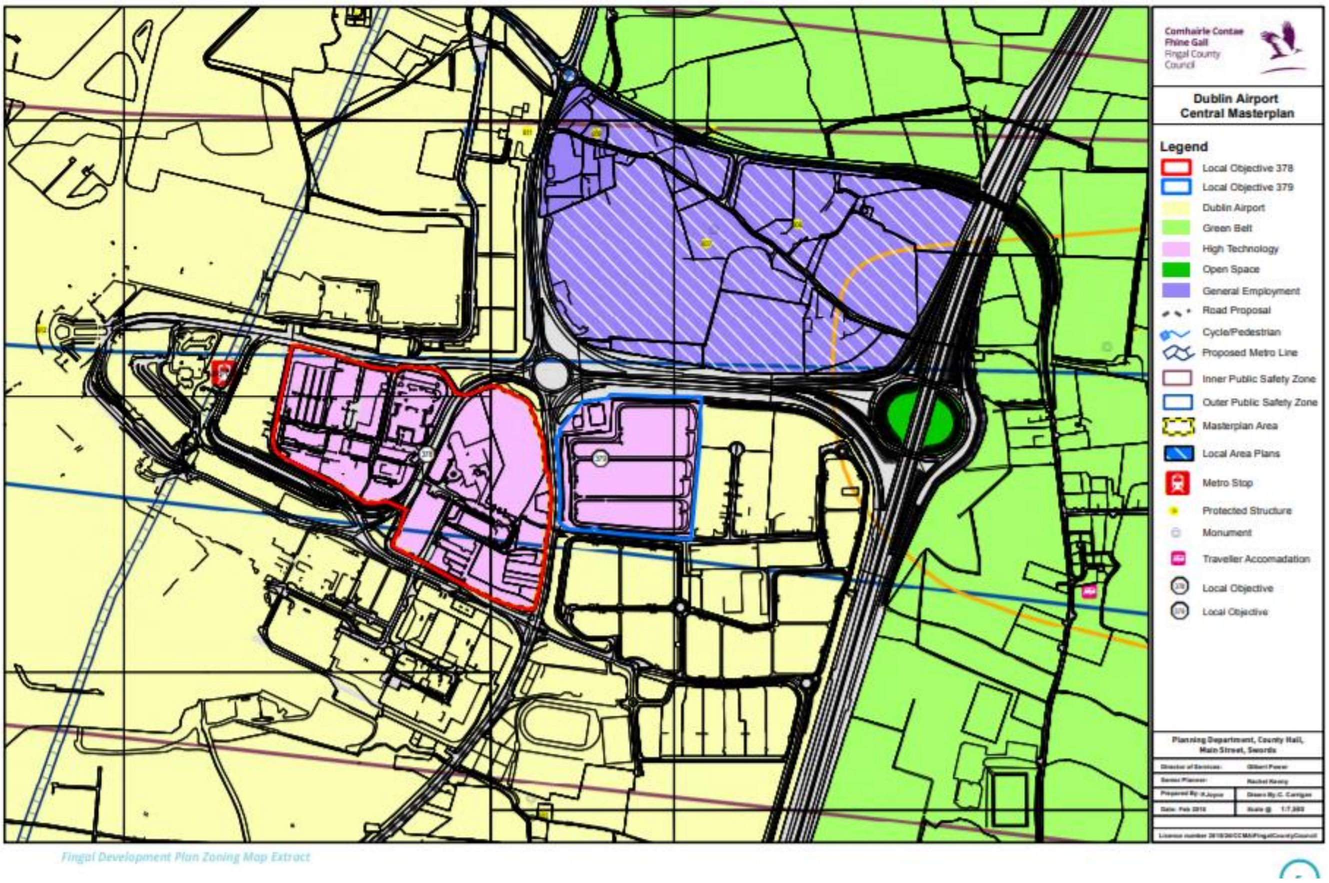


Figure 2.1: Map of Dublin Airport Central Masterplan

2.2 Dublin Airport Local Area Plan

The Dublin Airport Local Area Plan envisages improvements in the public transport provision as paramount to the success and sustainability of Dublin Airport. These improvements include facilitating the development of the Metro North proposal (now MetroLink), approved under Transport 21, to connect City Centre and Swords via Dublin Airport. The introduction of Metro North is likely to have a greater influence on employee travel than on passenger patterns, due to the trip origin/destinations involved.

2.3 Fingal County Council Development Plan (2017 – 2023)

The aim of the Fingal County Council Development Plan is to ‘plan for and support the sustainable long-term development of Fingal as an integrated network of vibrant socially and economically successful urban settlements and rural communities, strategic green belts and open countryside, supporting and contributing to the economic development of the County and of the Dublin City Region’.

The plan includes a Zoning Strategy that defines land use classes and establishes objectives and vision for each one. With this aim, the ‘Zoning Objective DA – Dublin Airport’ has been set to ‘ensure the efficient and effective operation and development of the airport in accordance with an approved Local Area Plan’.

Also, within the Key Economic Challenges, the provision of transport infrastructure is highlighted as a way to ‘ensure that employment generating lands are easily accessible by good quality public transport networks, in particular that there is an accessible public transport system to serve Swords and the Airport'. In relation to this, Objective SWORDS 5 is set to 'actively promote and support the early development of the indicative route for New Metro North (now called MetroLink) linking Swords with Dublin Airport and Dublin City Centre'.

2.4 Draft Fingal County Council Development Plan (2023-2029)

Building on the objectives of the Fingal County Council Development Plan 2017-2023, the Draft Fingal County Council Development Plan 2023-2029 recognises the role the delivery of MetroLink will play in achieving a number of the objectives for Dublin Airport:

- Place a strong emphasis on reducing climate emissions through increasing use of more sustainable transport modes and smarter travel approach for surface access to and from Dublin Airport.
- Support the restriction of increased employee car parking at the airport in an effort to reduce emissions.
- Support the requirement for large-scale developments at the airport to address carbon emissions as part of the development management process.

The Plan recognises that 'Dublin Airport is the most important strategic location for international connectivity in the Country for both passengers and freight.'

Objective CMO32 addresses Dublin Airport and the Project directly, to 'promote and facilitate the development of MetroLink, connecting Swords to the Airport and on to the City Centre.'

2.5 Dublin Airport Local Area Plan (Fingal County Council, 2020)

The Dublin Airport Local Area Plan provides an updated strategy to guide the continued growth of Dublin Airport in line with the relevant aviation, planning and environmental policy within the context of a sustainable growth framework.

Special focus is given to the promotion of public transport and sustainable transport (walking and cycling) to facilitate trips from and to the Dublin Airport. The LAP recognises the contribution of the Project in achieving such objectives and the Fingal County Council is set to support main stakeholders and help facilitate the delivery of the Project so that it provides the best possible service for all users. The LAP recognises that 'the development of MetroLink and core bus corridors under the BusConnects programme, including increased walking and cycling infrastructure will provide alternative sustainable transport modes to ensure better connectivity for passengers and workers arriving and departing the airport.'

Key public transport and sustainable transport objectives defined in this LAP include:

- OBJECTIVE CY2: All development proposals within the LAP shall be required to demonstrate provision of high-quality cycle facilities for employees, to include secure bike parking facilities, and changing and shower facilities to incentivise sustainable transport.
- OBJECTIVE PT1: Encourage and facilitate the provision of an integrated public transport network to serve Dublin Airport.
- OBJECTIVE PT2: Require the development of a transport interchange including a MetroLink station at the centre of the Dublin Airport campus, in accordance with the implementation of MetroLink by 2027 by the National Transport Authority and Transport Infrastructure Ireland.

2.6 South Fingal Transport Study

Within the South Fingal Transport Study, a Dublin Airport Transport Assessment has been undertaken, presenting issues relating to current and future surface access at Dublin Airport, excluding airside travel. The study supports the Dublin Airport Local Area Plan 2020.

The study recognises that there is currently no rail access at Dublin Airport and as such, the main means of surface access are private car, taxi and an extensive network of bus and coach services. Traffic volumes have increased by 20% in the past five years, with half of that growth occurring from 2014 to 2015. At this level of growth, the Airport Roundabout is at or near to its capacity on its westbound approach and therefore cannot be sustained into the future.

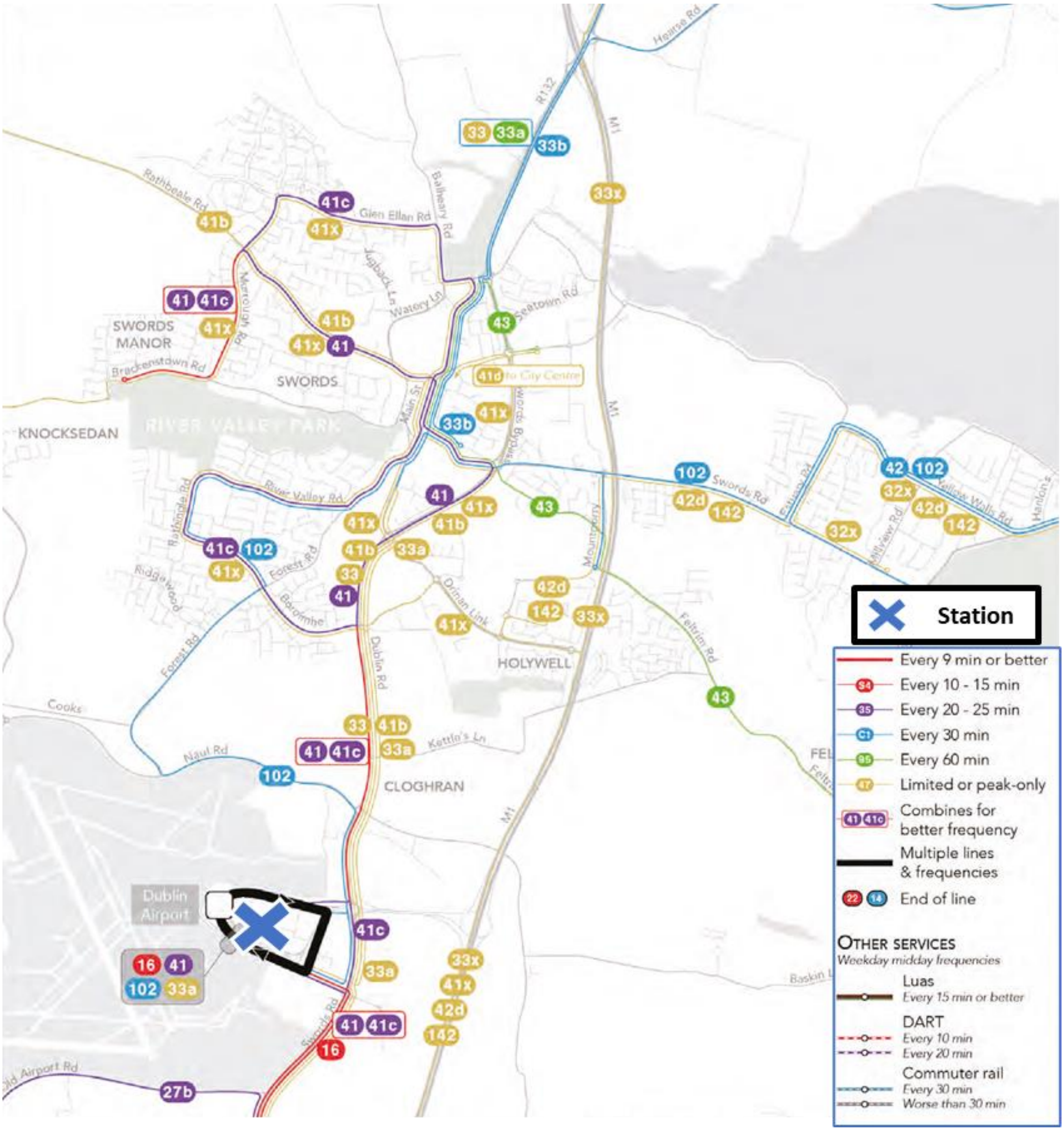
With reference to the Project, the study recognises that the future station at Dublin Airport offers a potential opportunity to expand the role of cycling through the development of a cycle hub in close proximity. It highlights the importance of the Project in guaranteeing journey time to and from the airport for both passengers and staff as the service is not subject to traffic congestion. It is noted that the Project could capture approximately 40-45% of total peak hour travel to/from the airport. It is therefore recommended in the study that Project is able to facilitate the transfer of the forecasted 55 million passengers per annum at Dublin Airport in 2046.

3. Baseline Conditions

This section describes the existing receiving environment within the vicinity of the Dublin Airport Station and the wider environs, and identifies the future baseline receiving environment for all modes of transport if conditions are planned to change in advance of the construction of the Project, such as the delivery of other proposed infrastructure projects.

3.1 Existing Public Transport Network

The Ground Transportation Centre (GTC) is within a 600m radius of Dublin Airport. The GTC comprises various pick-up and set-down areas, car parking, and bus and coach boarding facilities. This area is served by multiple lines, operators and frequencies that range from less than 15min to peak-hour services, as shown in Figure 3.1. The primary bus stopping area is located at the east of the station in close proximity to Terminal 1, as shown in Figure 3.2, and is served by at least 10 routes including 747 to Heuston Station, 16 to Kingston through Dublin City Centre (DCC), 41 to DCC, 740X to Cork, 760 to Galway and 4 to Waterford. Aircoach service 700 from Dublin Airport to Sandyford through city centre is also available in close proximity to the Dublin Airport Station.



(Base Source: www.busconnects.ie)

Figure 3.1: Existing bus network around Dublin Airport Station

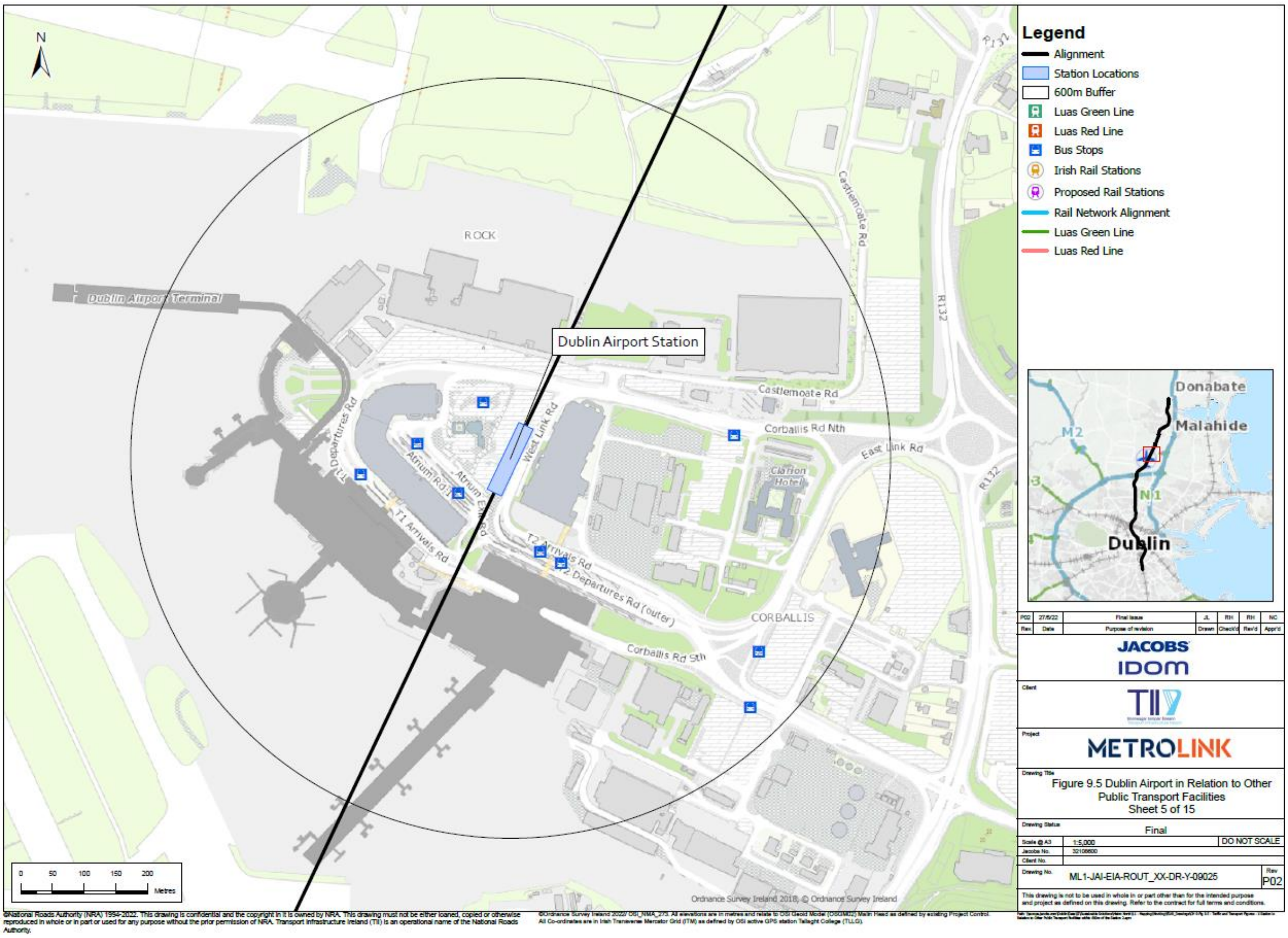
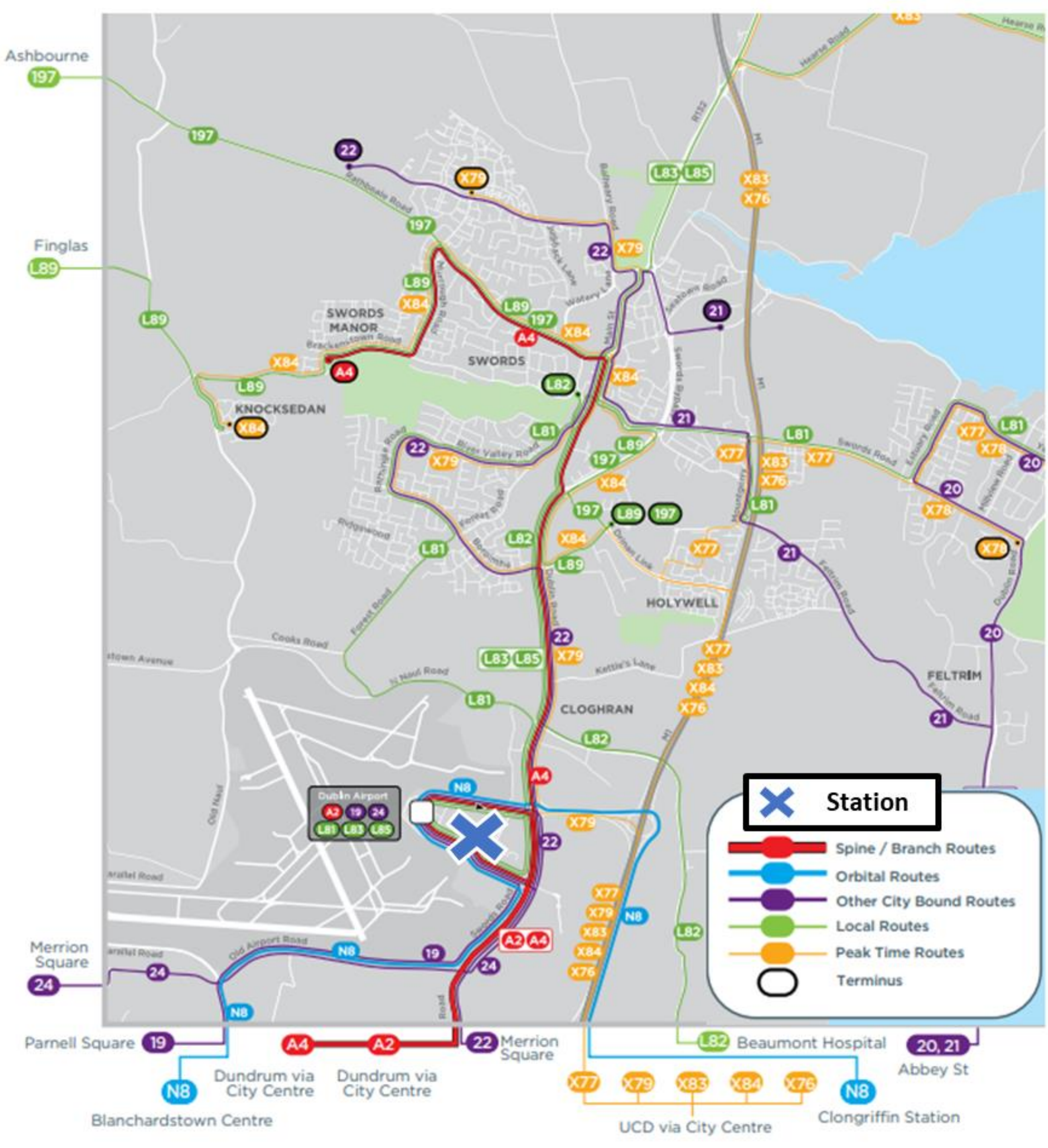


Figure 3.2: Transport facilities within 600m buffer

3.2 Future Receiving Environment – Public Transport Network

The Dublin Airport Station is also located along the proposed A Spine as part of the Bus Network Redesign as shown in Figure 3.3 and is in close proximity to orbital and local routes. Routes A2 (Airport-City Centre-Balinteer-Dundrum) and A4 (Swords-City Centre-Nutgrove) will have frequencies of 10 to 15 minutes on weekdays. Local route L81 (Portmarnock-Malahide-Swords-Airport) will have frequencies of 20 minutes on weekdays, and a frequency of 30 minutes on weekends. Other City-Bound routes 19,22 and 24 will have a frequency of 20 minutes on weekdays, and Orbital Route N8 will serve Blanchardstown Centre to Clongriffin Station.



(Base Source: www.busconnects.ie)

Figure 3.3: Proposed BusConnects network around Dublin Airport Station

3.3 Existing Road Network

The road network in the vicinity of the Dublin Airport Station includes the internal and the external road network. The external network consists of the M1 and M50, which are part of the Trans-European Network (TEN-T), facilitating vehicular connections with strategic national transport corridors.

The internal network of Dublin Airport is a one-way traffic circulation system that features an outer loop serving T1 departures and T1 Surface car park, and an inner loop serving T2 departures and T2 Surface car park, where the Dublin Airport Station will be located. The internal network connects to the external road network at three locations: at the junction of the R132 Swords Bypass and the M1, i.e. the Airport Roundabout; at the junction of Corballis Road South and the R132; and via a minor access point from the Naul Road just west of the Cloghran Roundabout, as shown in Figure 3.4.

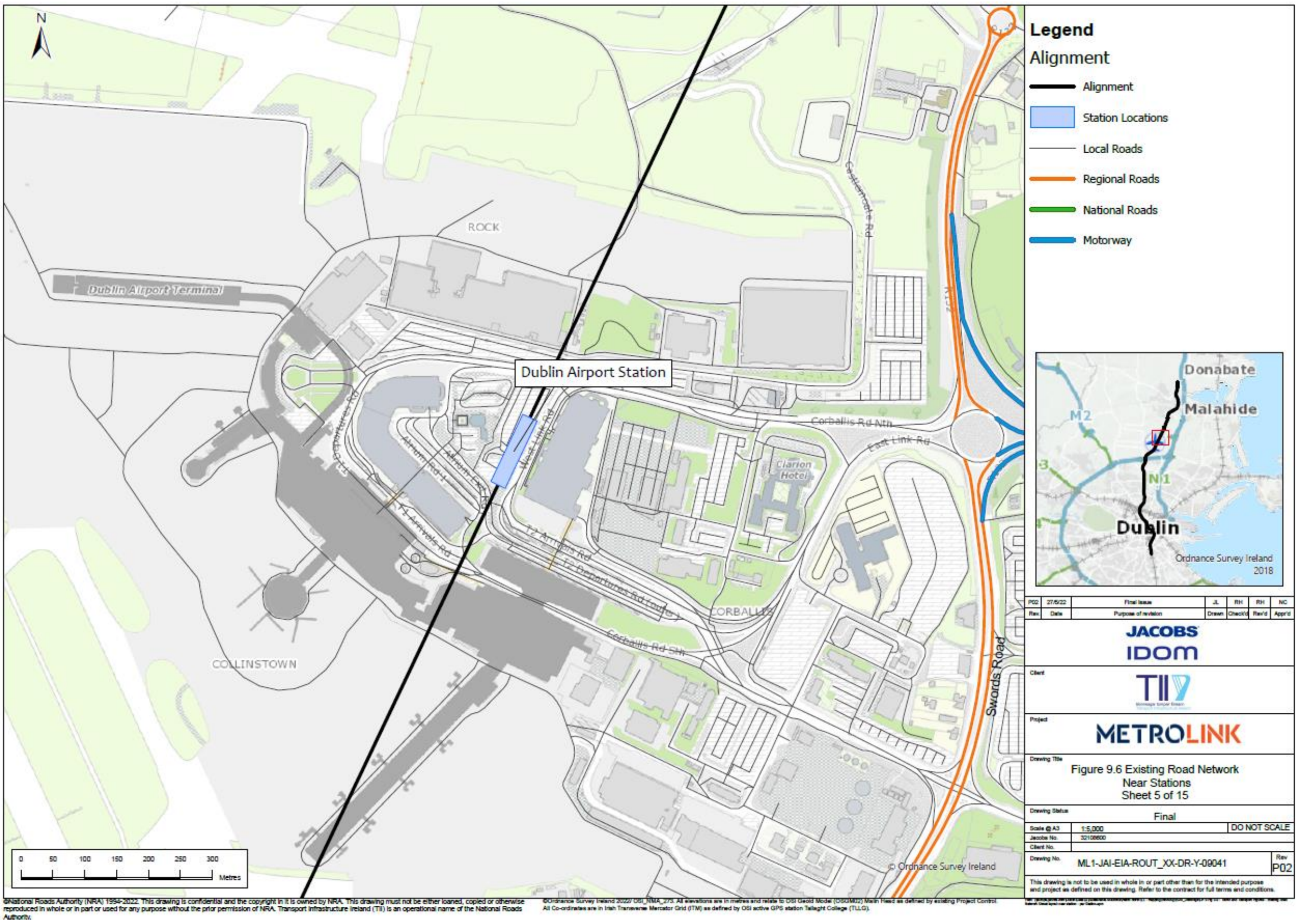


Figure 3.4: Street layout near Dublin Airport Station

T2 Departures Road is located at the east of the station and is a one-way single carriageway of between 7-8m width. It comprises two traffic lanes and a shared cycle and pedestrian lane for the northbound. This road provides direct access to the surface car park where the Dublin Airport Station is located.

South-west of the station, within the inner loop, there is a service road with one traffic lane and seven bus lanes accompanied by several stops for the multiple bus services operating in the area (total width around 41.5m). Pedestrian paths in this road are 3.3m wide and well protected from traffic. The pedestrian crossing at the southwest of the station is adequately marked and lit providing for safe crossing to and from Terminal 1.

Outer loop roads at the west and north of the station are one-way single carriageways with a bus lane and up to three traffic lanes (approximately 10.5m wide). These function as exiting roads from the airport and connect to the R132.

3.3.1 Junction Turning Count Locations

The Data Collection Report (ML1-JAI-TRA-ROUT_XX-RP-Y-00023) details the methodology and specification of traffic surveys undertaken for the Project. The survey locations relevant to Dublin Airport Station are shown in Table 3.1. Vehicle classifications used for the survey were Car, LGV, OGV1, OGV2, PSV, Motorcycle and Pedal

Cycle. PCUs values were also reported using appropriate conversion factors for each vehicle classification. The resulting PCU values from the survey results have been used for the LinSig modelling.

Demand flows were obtained from the turning counts and queue data from either observation from online traffic flow data sources or queue count surveys. Demand data has been used in all of the assessment work undertaken. Forecast traffic flows and pedestrian movements were also received from Dublin Airport Authority (DAA).

Table 3.1: Survey Locations Around Dublin Airport Station

Junction	Type of Survey
T2 Departures Road	Classified Junction Turning Count (CJTC)

3.3.2 Forecast Traffic Growth

Forecast traffic growth rates have been obtained from the Eastern Regional Model (ERM) for future years 2035, 2050 and 2065, for the appropriate scenario.

3.4 Future Receiving Environment – Road Network

DAA has received planning approval for the creation of a paid drop-off area for both Terminal 1 and Terminal 2. The proposed exit from the paid drop-off facility involves changes to the existing road layout and the relocation of a pedestrian crossing.

3.5 Existing Pedestrian Network

The existing pedestrian network inside Dublin Airport facilitates the safe movement of pedestrians between the terminals and car parks, taxi ranks and bus stops. Pedestrian paths are usually accompanied by grass verges or poles that function as barriers between pedestrians and motorised traffic. Similarly, there are zebra crossings present which have tactile paving, providing for safe crossing for the visually impaired. Pedestrian fences are often present along the boundaries of footways, segregating pedestrians and vehicular traffic.

An enclosed walkway is present between Terminal 1 and Terminal 2 and extends to the T2 Surface Car Park. This is approximately 4m in width, excluding buffer space.

The pedestrian network also allows employees to access offices and service areas that support the operation of Dublin Airport. These footways are approximately 2.3m in width, however they have restricted access to the public. The pedestrian network around the proposed Dublin Airport Station is considered to be of high sensitivity for pedestrians due to the high volume of pedestrians present.

3.5.1 Pedestrian Link Counts

The Data Collection Report (ML1-JAI-TRA-ROUT_XX-RP-Y-00023) details the locations around Dublin Airport Station where pedestrian surveys were undertaken.

3.5.2 Baseline Pedestrian Accessibility Review

The land around Dublin Airport Station consists primarily of land uses that support the airport's operation, such as car parks, hotels, taxi ranks and commerce inside Terminal 1 and 2. Beyond the environs of the Terminals themselves, it is not expected that there will be any passenger demand for walking to or from the Dublin Airport Station due to the nature of travel to and from an airport. Additionally, baseline pedestrian survey data was not collected in close proximity to Dublin Airport. As such, a pedestrian comfort assessment has not been undertaken at this location.

Figure 3.5 illustrates a 5min walking, 10min walking and 15min walking catchment from the Dublin Airport Station. Pedestrian facilities at Dublin Airport currently include tactile paving, pedestrian crossings and wide footpaths with lighting. Table 3.2 below lists local amenities within the catchment of Dublin Airport.

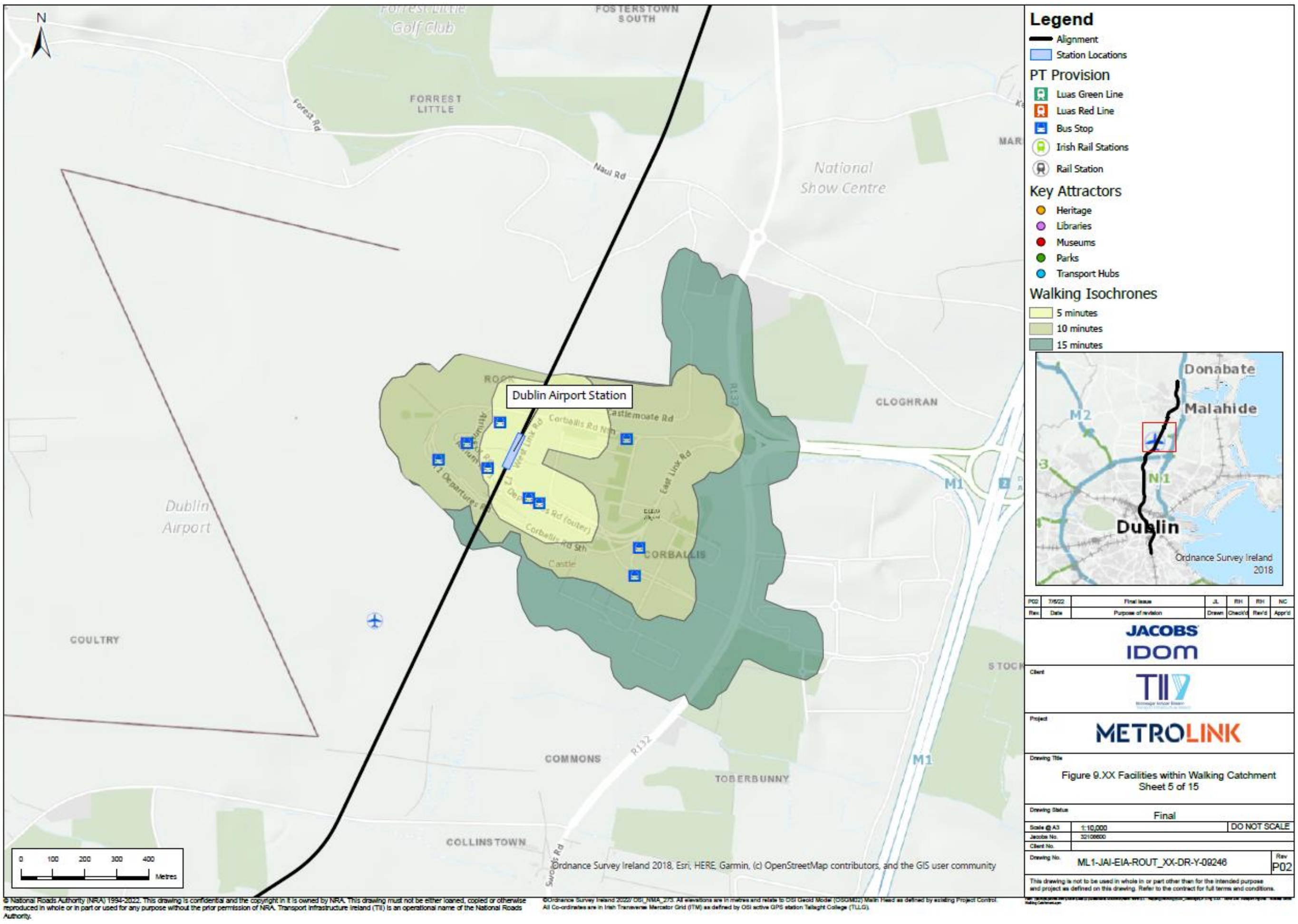


Figure 3.5: Dublin Airport Station Walking Catchment Area

Table 3.2 : Local facilities and amenities within walking catchment area

Facilities within 5min walking	Facilities within 10min walking	Facilities within 15min walking
Terminal 2	Terminal 1	Express Green Long-Term Car Park
Main bus stops in front of Terminal 1	Main bus stops in front of Terminal 1	Red Long-Term Car Park
Surface car park and multi-story car mark along the T2 Departures Rd.	Short Term Car Park C	ALSAA Sports Centre
-	Radisson Blu Hotel Dublin Airport	-
-	Maldron Hotel Dublin Airport	-

3.6 Future Receiving Environment – Pedestrian Network

DAA has received planning approval for the creation of a paid drop-off area for both Terminal 1 and Terminal 2. The proposed exit from the paid drop-off facility involves changes to the existing road layout and the relocation of a pedestrian crossing.

3.7 Existing Cycle Network

3.7.1 Baseline Cycle Accessibility Review

Figure 3.6 illustrates Dublin Airport Station within the GDA Cycle Network. Dublin Airport Station is within a cycle network circuit that links the R132 with Terminal 1, Terminal 2, car parks, bus stops and taxi ranks. This network forms part of the Feeder Network. The R132 alongside Dublin Airport is designated as a Primary route. In most cases, cycle lanes are segregated from traffic and shared with the pedestrian path**.** This is considered to be an area of high sensitivity for cyclists with Level B Quality of Service.

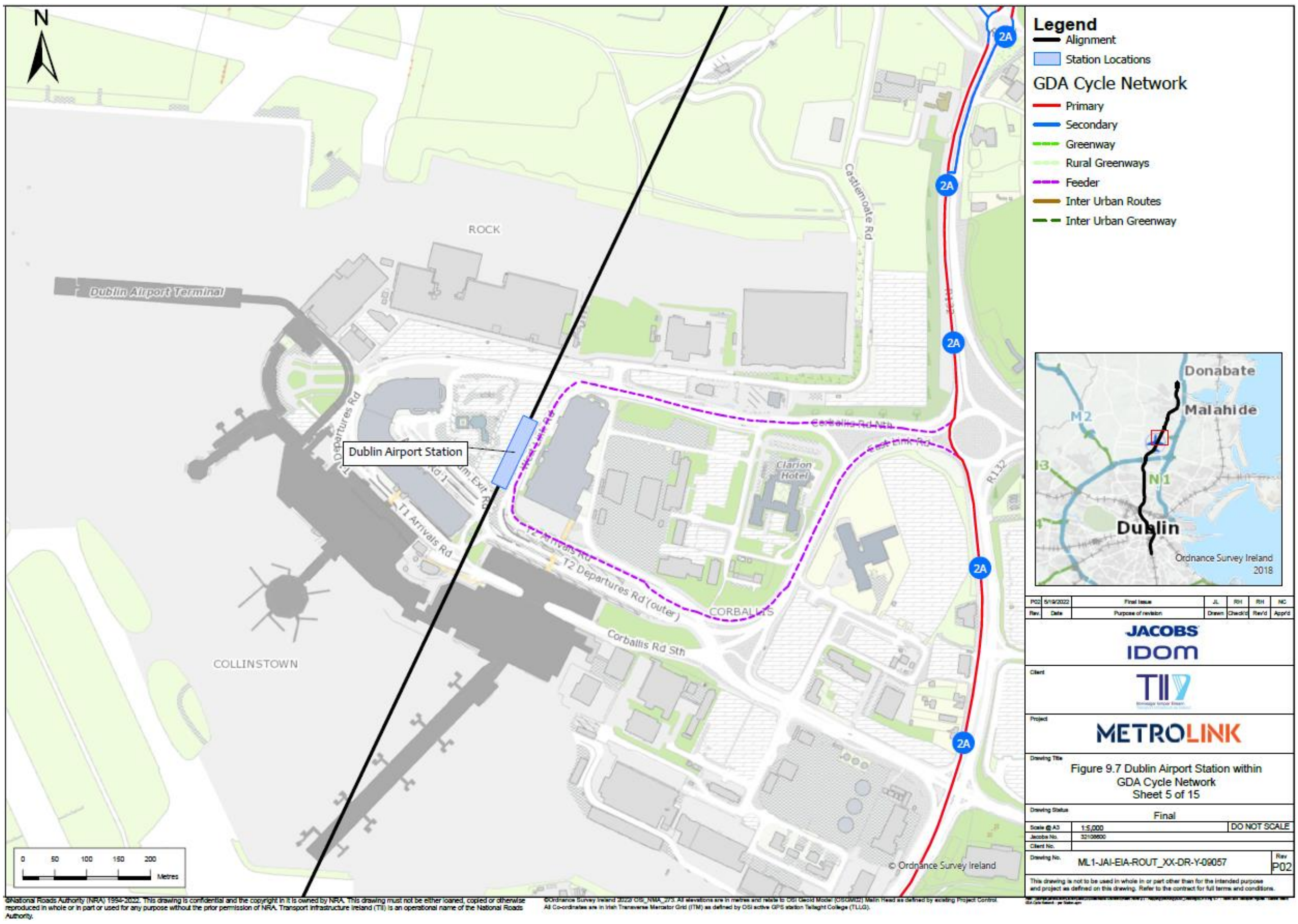


Figure 3.6: Proposed Station Location Within GDA Cycle Network

Figure 3.7 illustrates a 5min cycling and 10min cycling catchment from the Dublin Airport Station and the location of existing bike racks and Dublin Bike stations in close proximity to the station. As shown, there are no existing bike racks or Dublin Bike stations within the catchment of Dublin Airport.

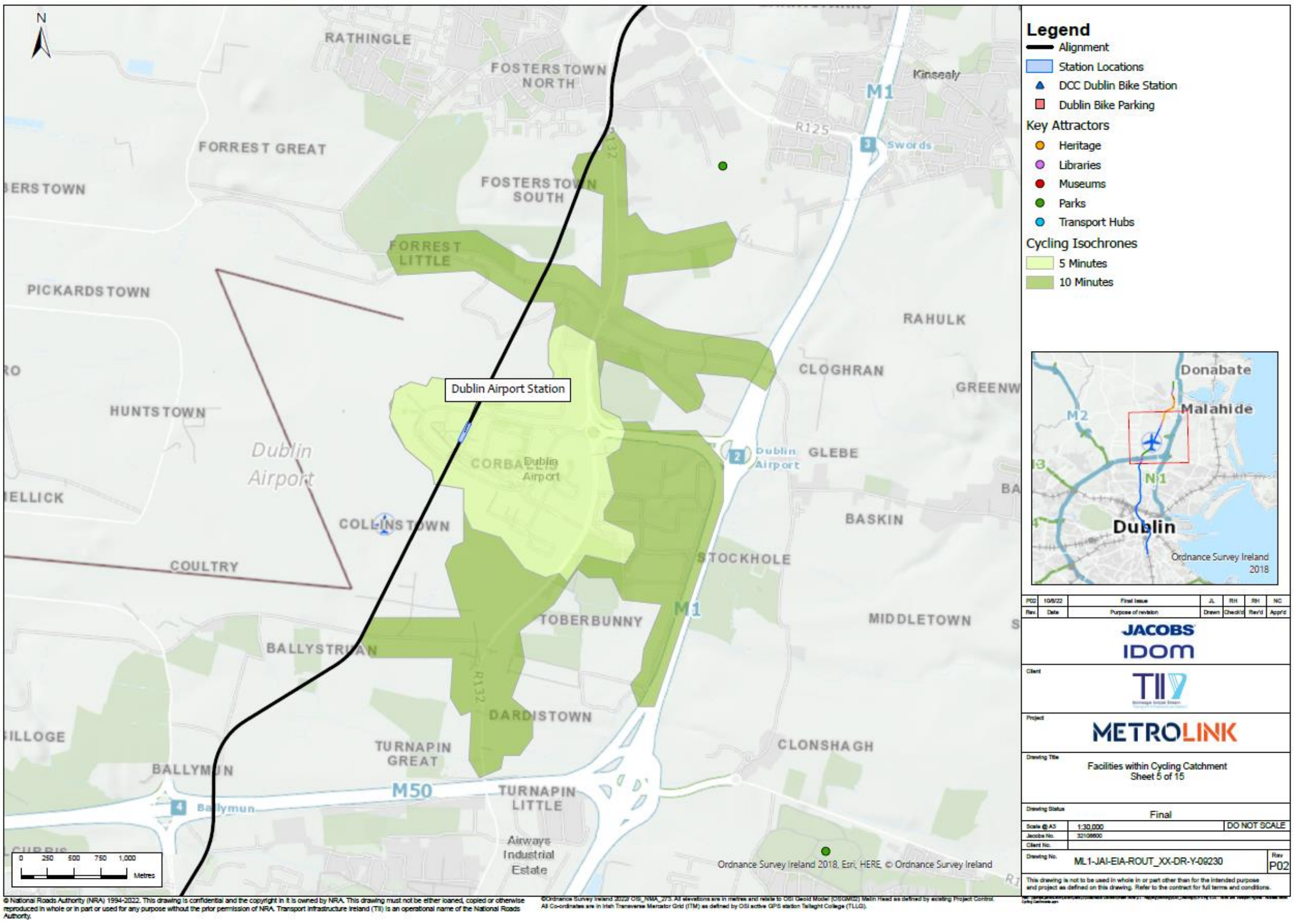


Figure 3.7: Dublin Airport Station Cycling Catchment Area

Table 3.3 lists the local amenities within the 5 and 10 minute cycling catchments of Dublin Airport. As shown, there are no local amenities within the 10minute cycling catchment.

Table 3.3: Local facilities and amenities within cycling catchment area

Facilities within 5min cycling	Facilities within 10min cycling
Terminal 1	-
Terminal 2	-
Main bus stops in front of Terminal 1	-
Surface car park and multi-story car mark along the T2 Departures Rd.	-
Main bus stops in front of Terminal 1	-
Short Term Car Park C	-
Radisson Blu Hotel Dublin Airport	-
Maldron Hotel Dublin Airport	-
Express Green Long-Term Car Park	-
Red Long-Term Car Park	-
ALSAA Sports Centre	-

3.8 Future Receiving Environment – Cycle Network

The future receiving environment of the cycle network will remain unchanged from the baseline scenario.

4. The Proposed Project – Dublin Airport Station

4.1 Site Location and Development Context

The proposed Dublin Airport Station will be located under the T2 Surface Car Park, between Terminal 1 and Terminal 2. It will be bound by the T2 Departure Road and the loop access road that connects Dublin Airport to the R132. Figure 4.1 below illustrates the location of the proposed station.

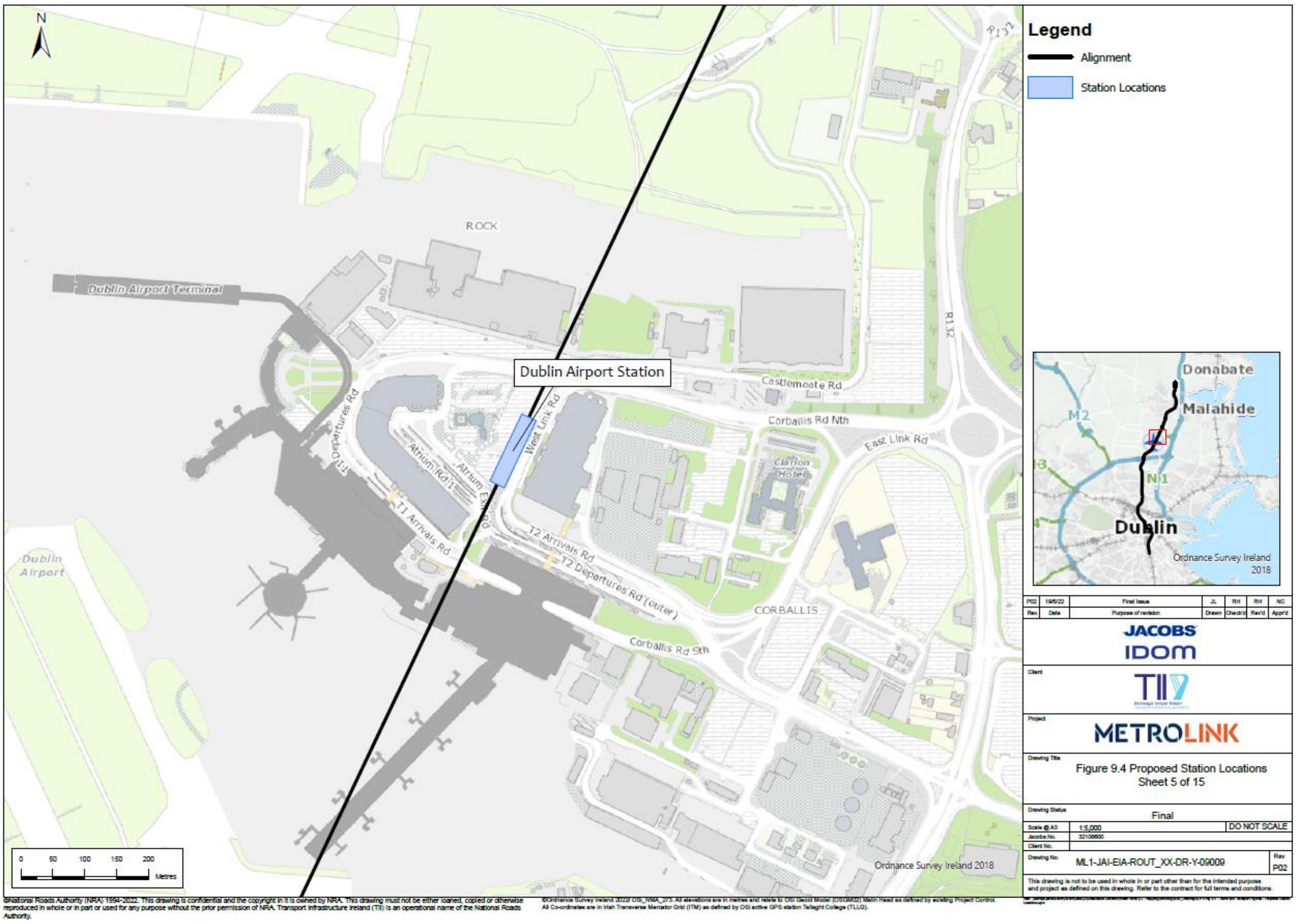


Figure 4.1: Proposed Site Location

Figure 4.2 shows the proposed passenger access/egress points to the proposed Dublin Airport station. It also illustrates the proposed layout for the existing T2 Surface Car Park at the west of the station, and the proposed improvements to the T2 Departures Road upon station completion. The car park will be remediated post construction to accommodate station infrastructure such as ventilation shafts, emergency accesses, etc. and will incorporate provision for new coach parking off a public plaza, facilitating passenger interchange between bus, metro and Dublin Airport. The design includes 16 bus bays and 4 parallel bus bays to maximise the capacity. The bus bays are connected with the new road which tie into the existing road network along the existing bus bays in front of Terminal 1.

Parking for 72 bicycles is provided as well as links to the existing internal cycle network. The design of Dublin Airport station is in line with DAA's future plans to develop a ground transportation hub at this location. Appropriate pedestrian connectivity is provided to Terminal 1 and Terminal 2 buildings from the station by means of a pedestrian crossing and path.

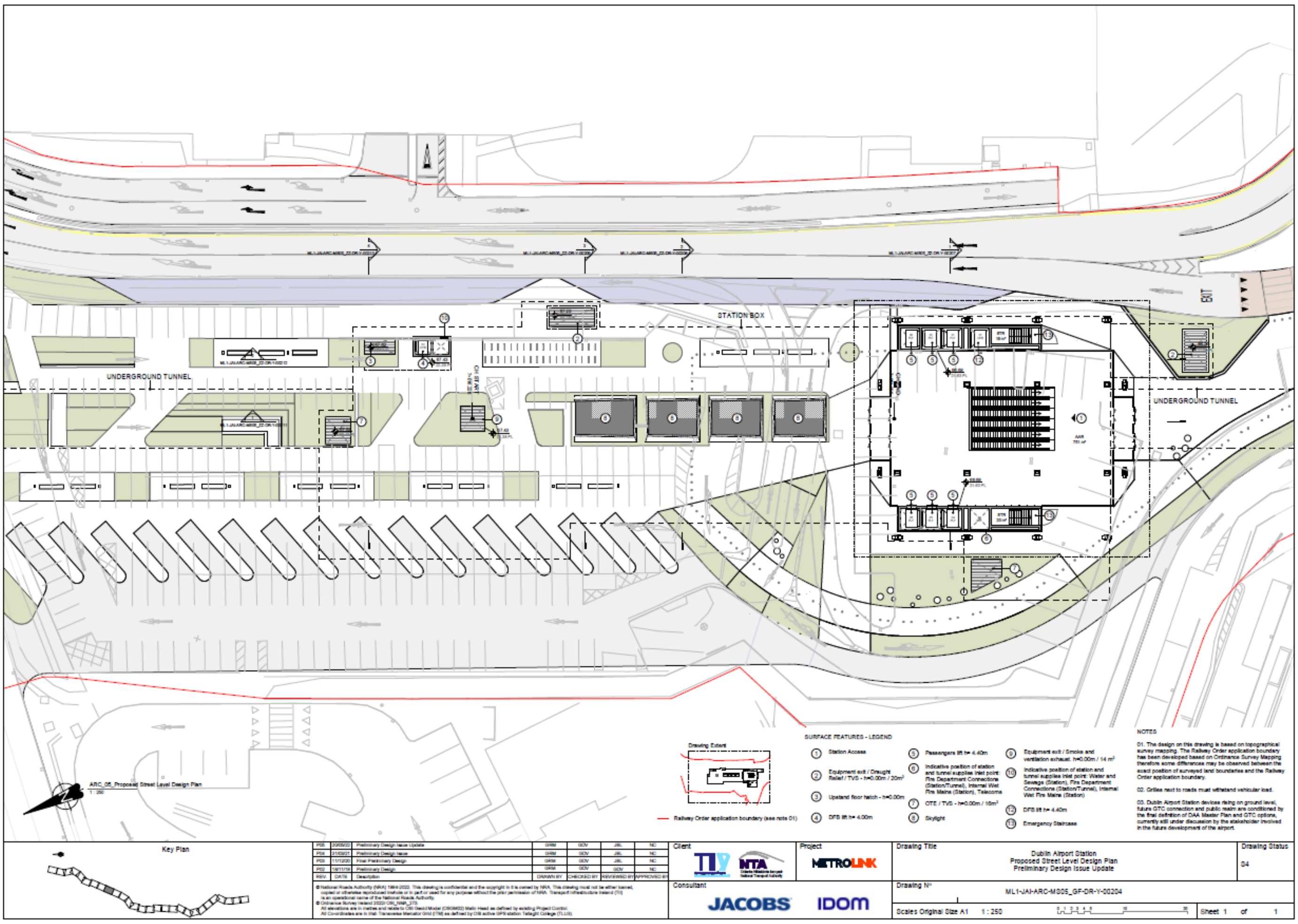


Figure 4.2: Dublin Airport Proposed Station Layout

5. Trip Generation / Trip Attraction

5.1 Operational Phase

Traffic estimates associated with the Dublin Airport Station Operational Phase have been established utilising the National Transport Authority's (NTA) East Regional Model (ERM). The ERM provides a comprehensive representation of multi-modal travel patterns across the GDA and therefore is a suitable tool for the testing and appraisal of the Project. Further details on the ERM can be found in the Traffic Modelling Plan (Appendix A9.3).

5.1.1 Passenger Boarding and Alighting

Passenger demand modelling has been used to predict the numbers of passengers boarding and alighting at each station, and the resulting passenger load on the MetroLink vehicles, for the years 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). The scenarios considered for assessment for each of the years 2035, 2050 and 2065 are outlines in Table 5.1.

Table 5.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project
Do Minimum Scenario	Committed transport schemes in the absence of the Project
Do Something - Scenario A	Scenario with the Project and committed transport schemes only.
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for Opening year (2035) and planned schemes under the Transport Strategy for the GDA for the Design Year (2050) and the Forecast Year (2065)

5.1.1.1 Boarding and Alighting Volumes

Table 5.2 to Table 5.9 show the boarding, alighting and public transport interchange numbers for the Dublin Airport Station during the peak hours. All data has been retrieved from the ERM developed by the NTA. Data in this section is reported for the busiest hour within each of the following peak 3hr periods:

- AM: busiest hour between 07:00 – 10:00;
- LT (lunch time): busiest hour between 10:00 – 13:00;
- SR (school run): busiest hour between 13:00 – 16:00;
- PM: busiest hour between 16:00 – 19:00.

Figure 5.1 presents the volume of passengers boarding and alighting at Dublin Airport station over the 12hr peak period (07:00-19:00) in both Scenario A and Scenario B. The boarding numbers for Scenario B are higher than Scenario A, with approximately 49,000 boarders in Scenario A 2065 and 51,000 boarders in Scenario B 2065. The alighting numbers in 2065 are higher in Scenario A then Scenario B, with approximately 48,000 alighting passengers in Scenario A and 47,000 alighting passengers in Scenario B.

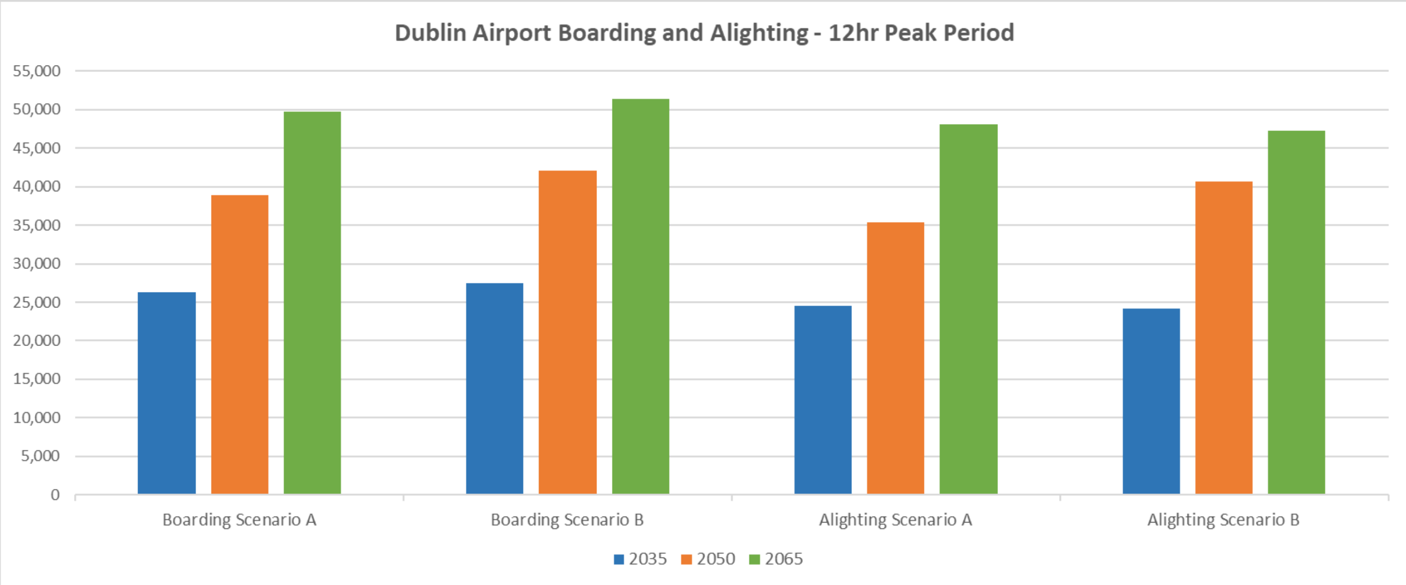


Figure 5.1: Dublin Airport Station 12hr Boarding and Alighting in Scenario A and Scenario B

5.1.1.2 Boarding and Alighting Volumes: Scenario A

Table 5.2 to Table 5.4 highlight the boarding and alighting passenger numbers for Dublin Airport Station in Scenario A.

During the Opening Year 2035, the results indicate that the PM peak hour will experience the highest number of boarding passengers and indicates that the southbound service will be the busiest direction. In this direction, 1,840 southbound passengers will board the MetroLink vehicles at the Dublin Airport Station during the AM peak hour and 2,500 will board southbound during the PM peak hour.

The highest number of passengers alighting at the Dublin Airport Station will be 3,200 during the AM peak hour in the northbound direction.

Table 5.2: Boarding and Alighting Numbers at Dublin Airport Station in 2035, Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	61	3,287	1,121	101	1,994	1,056	165	1,866	1,798	534	1,663	4,465
Southbound	1,842	771	7,330	2,294	75	3,387	2,641	78	3,595	2,542	147	3,795

Source: East Regional Model (ERM)

For the year 2050, during the AM peak hour, 2,649 passengers are expected to board the MetroLink vehicles southbound, while 4,500 northbound passengers are expected to alight. During the PM peak hour, 3,500 passengers are expected to board the MetroLink vehicles southbound, with 2,300 northbound passengers alighting.

Table 5.3: Boarding and Alighting Numbers at Dublin Airport Station in 2050, Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	132	4,536	1,390	211	3,046	1,467	274	2,728	2,011	787	2,324	5,485
Southbound	2,649	1,041	8,666	3,533	155	5,206	3,954	113	4,892	3,515	225	5,039

Source: East Regional Model (ERM)

For the year 2065, during the AM peak hour, 3,366 passengers are expected to board the MetroLink vehicles and head south. 5,770 northbound passengers are expected to alight northbound. During the PM peak hour, 4,500 passengers are expected to board and head south, while 3,066 northbound passengers will alight.

Table 5.4: Boarding and Alighting Numbers at Dublin Airport Station in 2065, Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	211	5,770	1,763	298	4,131	1,444	332	4,212	2,276	1,001	3,066	6,655
Southbound	3,366	1,222	10,174	4,569	177	5,934	4,955	257	6,153	4,500	361	6,522

Source: East Regional Model (ERM)

5.1.1.3 Boarding and Alighting Volumes: Scenario B

Table 5.5 to Table 5.7 highlight the boarding and alighting passenger numbers for Dublin Airport Station in Scenario B.

For the year 2035, during the AM peak hour, 2,000 passengers will board the MetroLink vehicles southbound, with 3,300 northbound passengers alighting. During the PM peak hour, 2,400 southbound passengers are expected to board while 1,600 northbound passengers will alight.

Table 5.5: Boarding and Alighting Numbers at Dublin Airport Station in 2035, Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	75	3,318	1,145	129	2,066	1,108	219	1,874	2,019	336	1,672	3,798
Southbound	2,004	553	7,137	2,536	84	3,774	2,831	63	3,783	2,484	89	3,599

Source: East Regional Model (ERM)

Table 5.6 shows the boarding and alighting passenger numbers for the 2050 year. During the AM peak hour, it is expected that 2,800 passengers will board and head in southbound and 4,800 northbound passengers will alight. During the PM peak hour, 3,800 passengers are expected to board and head south while 1,000 are expected to board and head north. It is anticipated that 2,327 northbound passengers will alight, and 296 southbound passengers will alight.

Table 5.6: Boarding and Alighting Numbers at Dublin Airport Station in 2050, Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	159	4,883	1,425	227	3,759	1,322	308	3,300	1,818	1,016	2,327	5,644
Southbound	2,798	1,054	8,860	3,782	325	5,390	4,143	221	5,123	3,849	296	5,486

Source: East Regional Model (ERM)

For the year 2065 during the AM peak, 3,432 passengers will board the MetroLink vehicles and head south, with 5,820 northbound passengers alighting. During the PM peak hour, 4,600 southbound passengers are expected to board while 2,900 northbound passengers will alight.

Table 5.7: Boarding and Alighting Numbers at Dublin Airport Station in 2065, Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	254	5,820	1,678	372	4,322	1,680	543	4,164	2,688	564	2,933	5,208
Southbound	3,432	1,118	11,235	4,798	188	6,379	5,217	174	6,200	4,636	121	5,982

Source: East Regional Model (ERM)

5.1.1.4 Public Transport Interchange Volumes

Dublin Airport is a major trip attractor and generator, and most of the related trips will terminate or start at this location. The Project facilitates such trips and provides for a faster and more direct connection to Dublin Airport than the current bus services. For these reasons, it is expected that the number of transfers to and from public transport modes will be very low at the Dublin Airport Station. The Ground Transportation Centre (GTC) is within a 600m radius of Dublin Airport. The GTC comprises various pick-up and set-down areas, car parking, and bus and coach boarding facilities. This area is served by multiple lines, operators and frequencies. The Dublin Airport Station is also located along the proposed A Spine as part of the Bus Network Redesign, as shown in section 3.2.

Table 5.8: Transfers To/From Other Public Transport Modes in Scenario A

Scenario A									
Year	Peak	Boarding				Alighting			
		First Boarding	From Bus	From Rail/DART	From Luas	Final Stop	To Bus	To Rail/DART	To Luas
2035	AM	1,830	73	-	-	4,030	29	-	-
	PM	3,036	40	-	-	1,670	140	-	-
2505	AM	2,697	83	-	-	5,552	25	-	-
	PM	4,264	38	-	-	2,390	159	-	-
2065	AM	3,472	106	-	-	6,965	28	-	-

Scenario A									
Year	Peak	Boarding				Alighting			
		First Boarding	From Bus	From Rail/DART	From Luas	Final Stop	To Bus	To Rail/DART	To Luas
	PM	5,456	45	-	-	3,234	193	-	-

Source: East Regional Model (ERM)

Table 5.9: Transfers To/From Other Public Transport Modes in Scenario B

Scenario B									
Year	Peak	Boarding				Alighting			
		First Boarding	From Bus	From Rail/DART	From Luas	Final Stop	To Bus	To Rail/DART	To Luas
2035	AM	2,007	71	-	-	3,852	19	-	-
	PM	2,784	37	-	-	1,690	71	-	-
2050	AM	2,889	69	-	-	5,925	12	-	-
	PM	4,828	37	-	-	2,570	53	-	-
2065	AM	3,632	54	-	-	6,933	5	-	-
	PM	5,171	28	-	-	2,992	61	-	-

Source: East Regional Model (ERM)

6. Assessment of Impacts

6.1 Operational Phase

As part of the assessment of impacts associated with the Operational Phase of the project, the impact of the proposed Dublin Airport Station on all modes of transport has been examined–public transport (PT), road users, walking and cycling.

6.1.1 Public Transport Impact Assessment

The ERM model has been interrogated in order to estimate the reduction in private car travel associated with origin and destination trips in the zones around Dublin Airport Station. In Scenario A, there is a 23% increase in trip demand between 2035 and 2050, increasing from 35,206 trips in 2035 to 43,232 trips in 2050. There is a 15% increase in trip demand between 2050 and 2065, reaching a demand of 49,619 trips in 2065. Between the Do Minimum and Do Something scenarios, there is a 6 percentage point increase in PT mode share in 2035, from 33% in the Do Minimum scenario to 39% in the Do Something scenario. In both 2050 and 2065, there is an increase of 7 percentage points in PT mode share, increasing from 39% in the 2050 Do Minimum scenario, to 46% in the 2050 Do Something scenario, and from 44% in the 2065 Do Minimum scenario, to 51% in the Do Something.

Car mode share decreases by 5 percentage points in 2035, from 61% in the Do Minimum to 56% in the Do Something. In 2050, Car mode share decreases by 6 percentage points between the Do Minimum and Do Something scenarios, from 54% to 48%. In 2065, Car mode share decreases by 6 percentage points, from 48% in the Do Minimum scenario to 42% in the Do Something scenario.

Active Modes mode share (which includes Walking and Cycling) reduces by 1 percentage points in all years. Whilst end-to-end Active Modes trips will reduce, there will be an increase in Active Modes trips to and from the station where passengers will interchange with the Project. Overall, there is a shift towards sustainable modes (Active Modes and PT combined), and a reduction in Car trip demand at Dublin Airport.

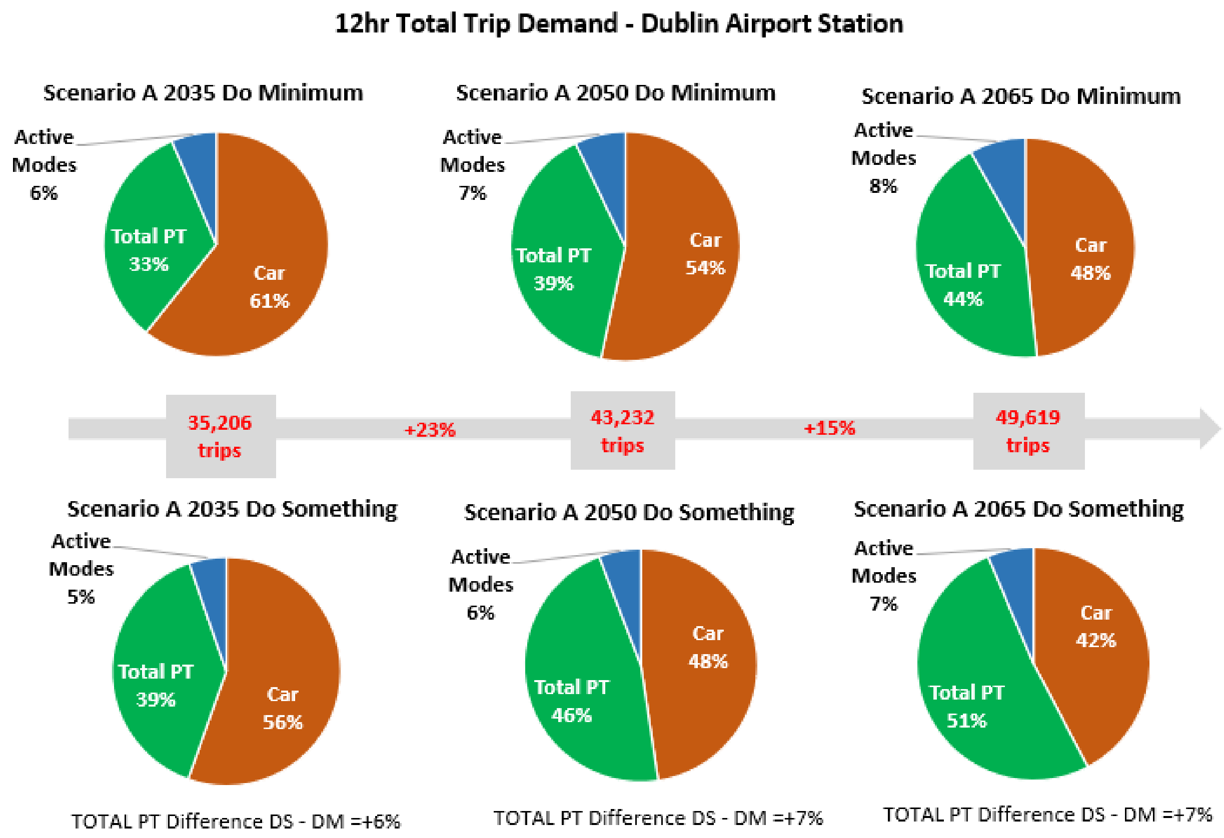


Figure 6.1: Dublin Airport Mode Share – Scenario A

In Scenario B, there is a 22% increase in trip demand between 2035 and 2050, increasing from 35,361 trips in 2035 to 43,293 trips in 2050. There is a 15% increase in trip demand between 2050 and 2065, reaching a demand of 49,671 trips in 2065. Between the Do Minimum and Do Something scenarios, there is a 5 percentage point increase in PT mode share in 2035, from 35% in the Do Minimum scenario to 40% in the Do Something scenario. In both 2050 and 2065, there is an increase of 7 percentage points and 6 percentage points in PT mode share, increasing from 43% in the 2050 Do Minimum scenario, to 50% in the 2050 Do Something scenario, and from 46% in the 2065 Do Minimum scenario, to 52% in the Do Something.

Car mode share decreases by 4 percentage points in 2035, from 59% in the Do Minimum to 55% in the Do Something. In 2050, Car mode share decreases by 6 percentage points between the Do Minimum and Do Something scenarios, from 50% to 44%. In 2065, Car mode share decreases by 5 percentage points, from 46% in the Do Minimum scenario to 41% in the Do Something scenario.

Active Modes mode share (which includes Walking and Cycling) reduces by 1 percentage points in all years. Whilst end-to-end Active Modes trips will reduce, there will be an increase in Active Modes trips to and from the station where passengers will interchange with the Project. Overall, there is a shift towards sustainable modes (Active Modes and PT combined), and a reduction in Car trip demand at Dublin Airport.

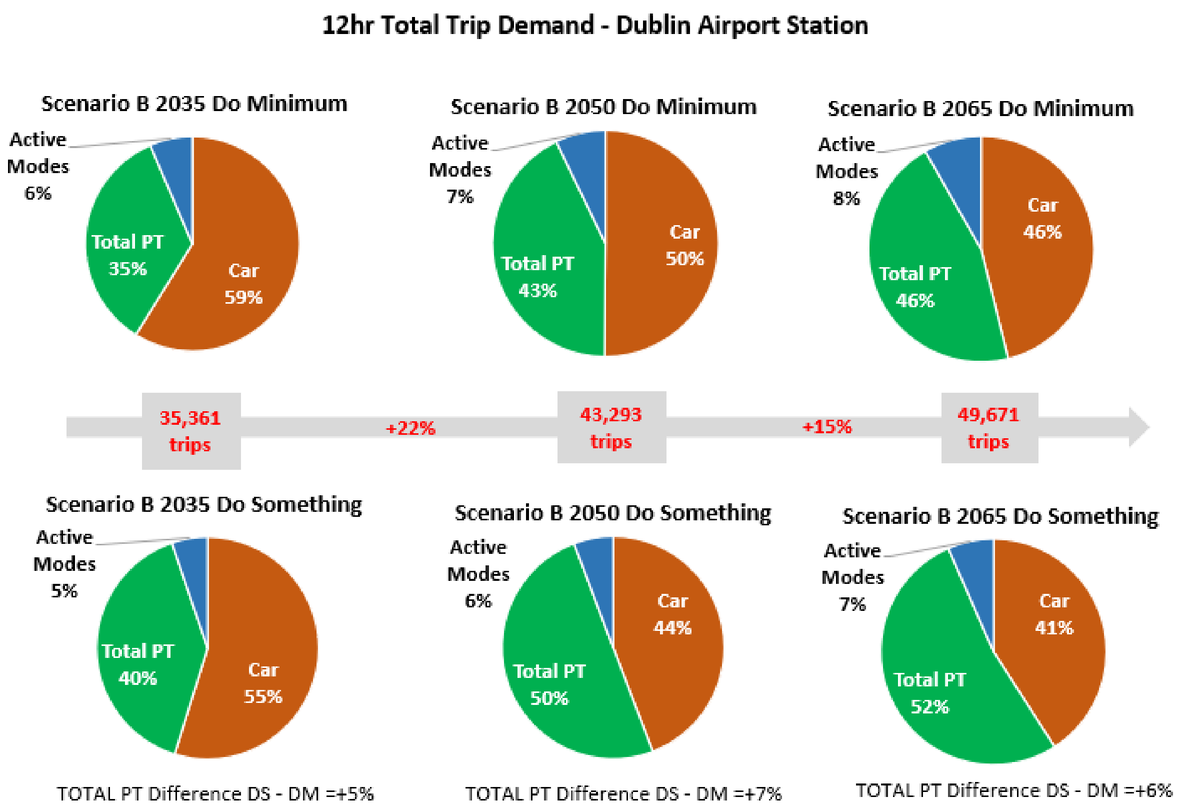


Figure 6.2: Dublin Airport Mode Share- Scenario B

PT (including the Project) mode share at Dublin Airport sees an increase of between 5 and 10 percentage points in Scenario A 2035 AM peak hour. This increases to an increase of between 10 and 20 percentage points in 2050 in the Terminals zone only, however there is a 10 to 20 percentage point increase in additional zones around Dublin Airport in 2065. In Scenario B 2035 AM peak hour, the zones around Dublin Airport see an increase of between 5 and 10 percentage points. In 2050, the Terminals zone sees a percentage point increase of 5-10 percentage points, however the other zones (such as the office lands to the north and east) see increases of 10 to 20 percentage points. In 2065, all zones at Dublin Airport see an increase of 5 to 10 percentage points in Total PT mode share.

In the PM period in Scenario A, Total PT mode share increases by up to 20 percentage points in both 2035 and 2065, however sees an increase of up to 10 percentage points in 2050. Figure 6.3 presents the change in PT mode share per between the Do Minimum and Do Something scenarios in Scenario A 2065 AM peak hour, whilst Figure 6.4 presents the same for Scenario B 2065 AM peak hour.

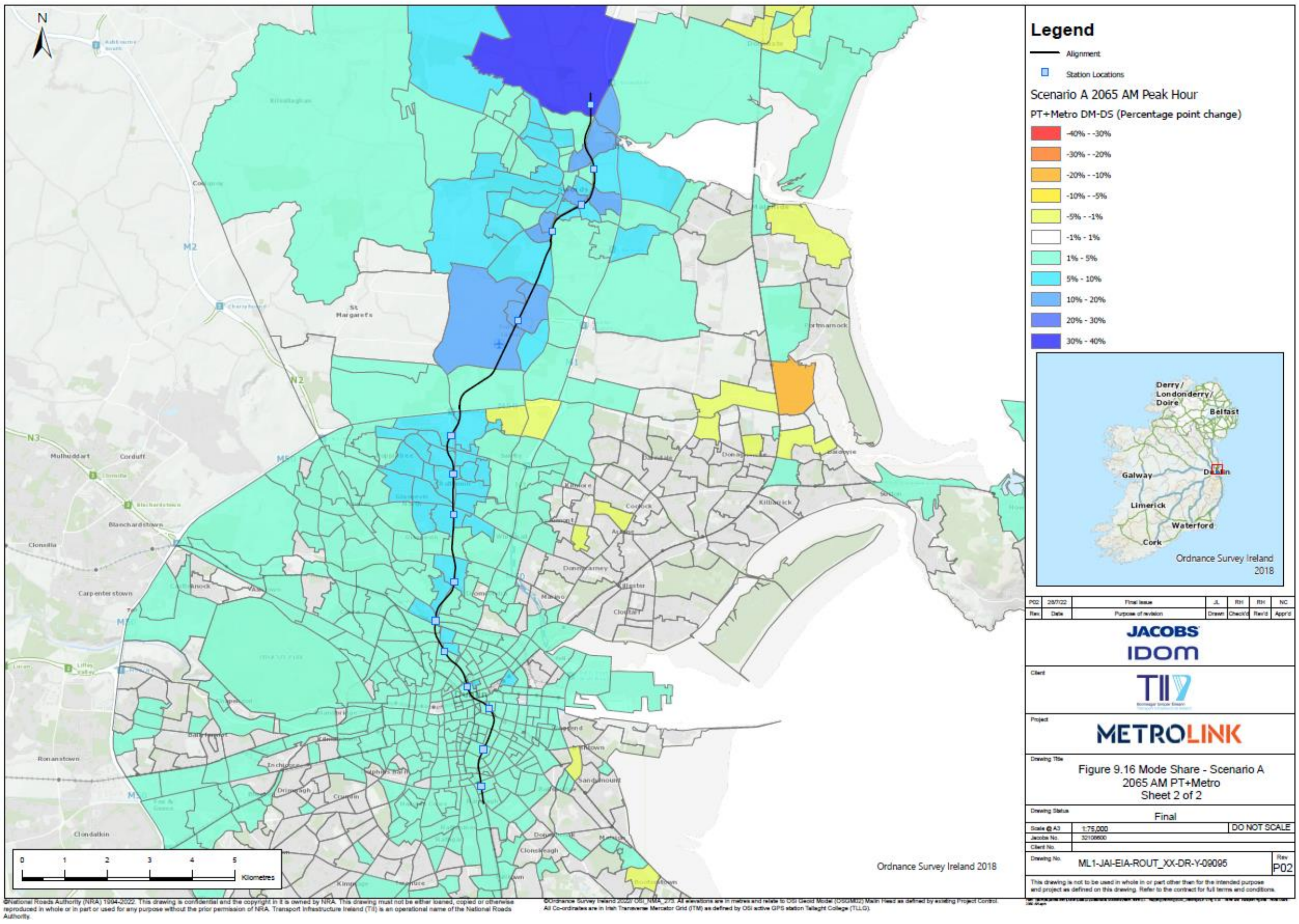


Figure 6.3: Changes in Public Transport (Including the Project) Mode Share in Scenario A 2065 AM Peak Hour

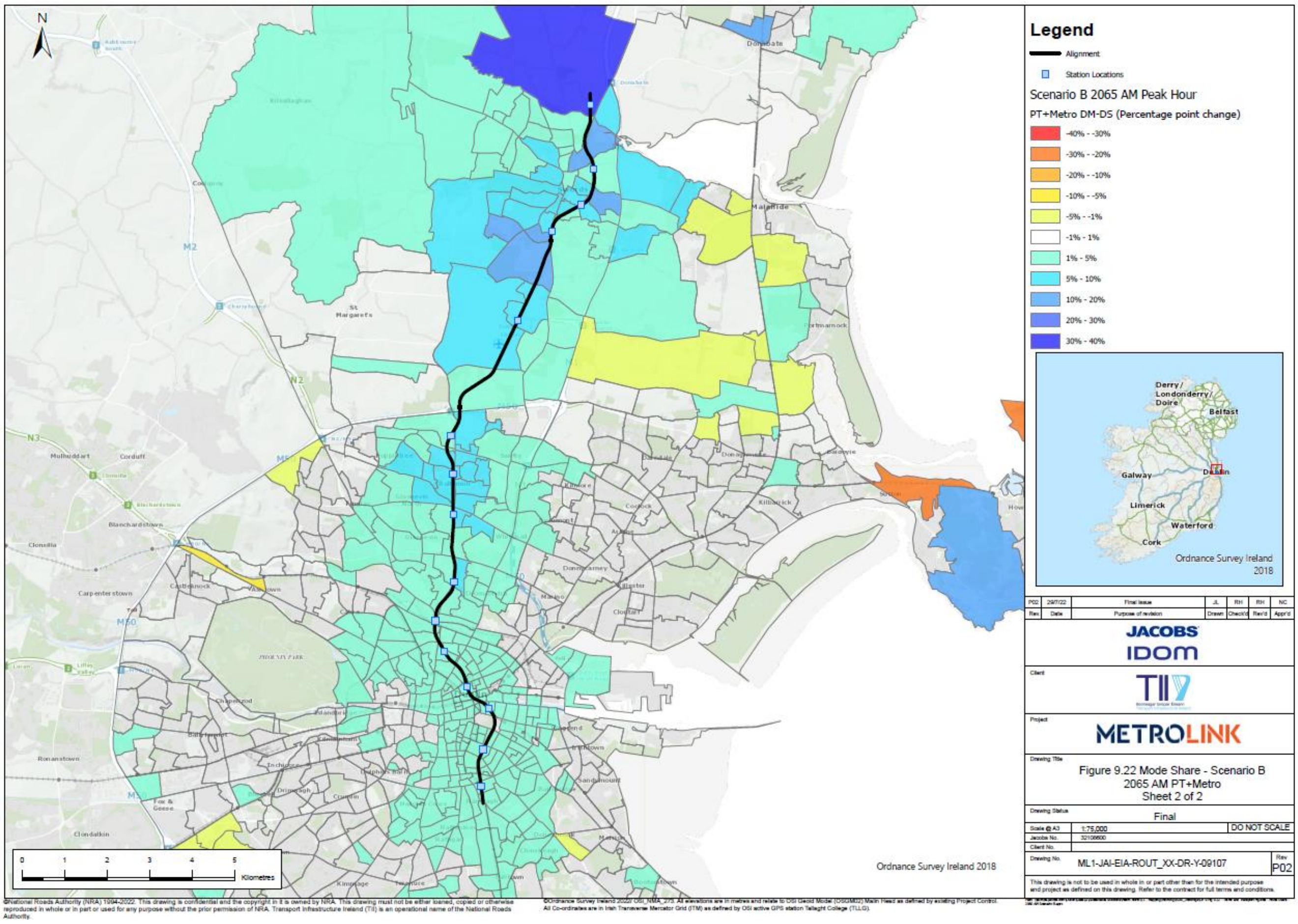


Figure 6.4: Changes in Public Transport (Including the Project) Mode Share in Scenario B 2065 AM Peak Hour

Table 6.1 presents the percentage modal split for Terminal Workers, Office Workers, and Passengers at Dublin Airport in both the AM and PM peak hours in Scenario B 2035 (Scenario B Opening Year has higher boarding and alighting figures than Scenario A Opening Year, so analysis was completed for Scenario B only). The model indicates that private car has the highest mode share for workers in the office lands in the AM peak hour, whereas Terminal workers primarily travel by public transport. In the PM peak hour, Road has the highest mode share for both Terminal Workers and Office workers. The majority of Passengers travel by public transport in the AM peak hour, however in the PM peak hour, Road holds the highest mode share.

Table 6.1: Dublin Airport Modal Splits

Purpose	Mode	AM Peak Hour			PM Peak Hour		
		Airport Origin	Airport Destination	Total	Airport Origin	Airport Destination	Total
Workers Terminal	Cycle	0.0%	0.7%	0.4%	0.8%	0.0%	0.4%
	Walk	0.0%	0.6%	0.3%	0.6%	0.2%	0.4%
	PT (including Project)	54.1%	51.3%	52.7%	45.3%	44.0%	44.6%
	Road	45.6%	47.5%	46.5%	53.3%	55.8%	54.6%
Workers Offices (North and East)	Cycle	1.1%	2.7%	1.9%	3.1%	0.9%	2.0%
	Walk	9.3%	2.6%	5.9%	3.0%	8.5%	5.7%

Purpose	Mode	AM Peak Hour			PM Peak Hour		
		Airport Origin	Airport Destination	Total	Airport Origin	Airport Destination	Total
	PT (including Project)	39.5%	28.4%	33.9%	28.4%	28.5%	28.5%
	Road	50.1%	66.4%	58.2%	65.4%	62.2%	63.8%
Total Workers	Cycle	24.9%	25.0%	25.0%	25.0%	25.0%	25.0%
	Walk	25.2%	25.5%	25.4%	25.6%	25.2%	25.4%
	PT (including Project)	27.5%	26.0%	26.8%	26.2%	27.3%	26.7%
	Road	23.9%	20.3%	22.1%	22.0%	23.4%	22.7%
Passengers	Cycle	0.0%	0.7%	0.4%	0.8%	0.0%	0.4%
	Walk	0.2%	0.6%	0.4%	0.6%	0.2%	0.4%
	PT (including Project)	54.1%	51.3%	52.7%	45.3%	44.0%	44.6%
	Road	45.6%	47.5%	46.5%	53.3%	55.8%	54.6%

Figure 6.5 presents the change in mode share for Dublin Airport Flyers between the Do Minimum and Do Something scenarios in Scenario B 2035, 2050 and 2055 during the12hr period. Figure 6.6 presents the change in mode share for Dublin Airport Workers for the same scenarios. For Flyers in 2035, Total PT (including the Project) mode share increases by 7 percentage points when the Project is in place, with the Project accounting for 43% of total mode share. In 2050, Total PT mode share increases by 10 percentage points, from 54% in the Do Minimum scenario, to 64% in the Do Something scenario, with the Project accounting for 56% of total mode share. In 2065, Total PT mode share increases from 59% in the Do Minimum scenario, to 66% in the Do Something scenario. The Project accounts for 59% of total mode share in this scenario. Car mode share sees the largest reduction in 2065, reducing from 41% in the Do Minimum scenario, to 33% in the Do Something.

For Workers, Total PT mode share increases from 22% in the Do Minimum scenario, to 32% in the Do Something scenario, with the Project accounting for 26% of total mode share. In 2050, Total PT mode share increases from 27% in the Do Minimum scenario, to 41% in the Do Something scenario, with the Project accounting for 33% of total mode share. In 2065, Total PT mode share increases from 30% in the Do Minimum scenario, to 42% in the Do Something scenario, with the Project accounting for 34% of total mode share. Car mode share has the largest percentage point reduction in 2050, reducing from 73% to 60%.

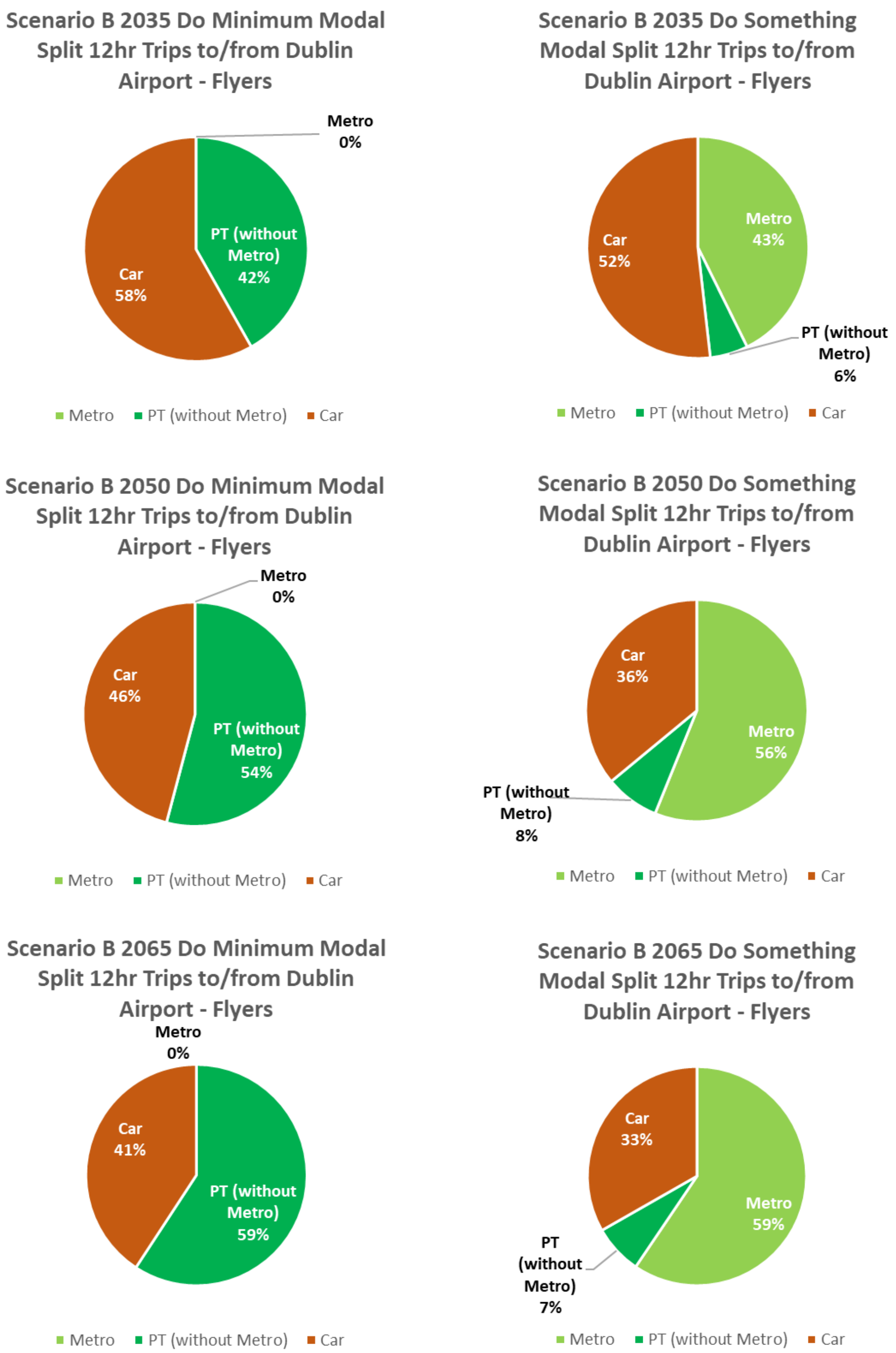


Figure 6.5: Change in Mode Share for Airport Flyers - Scenario B 12hr

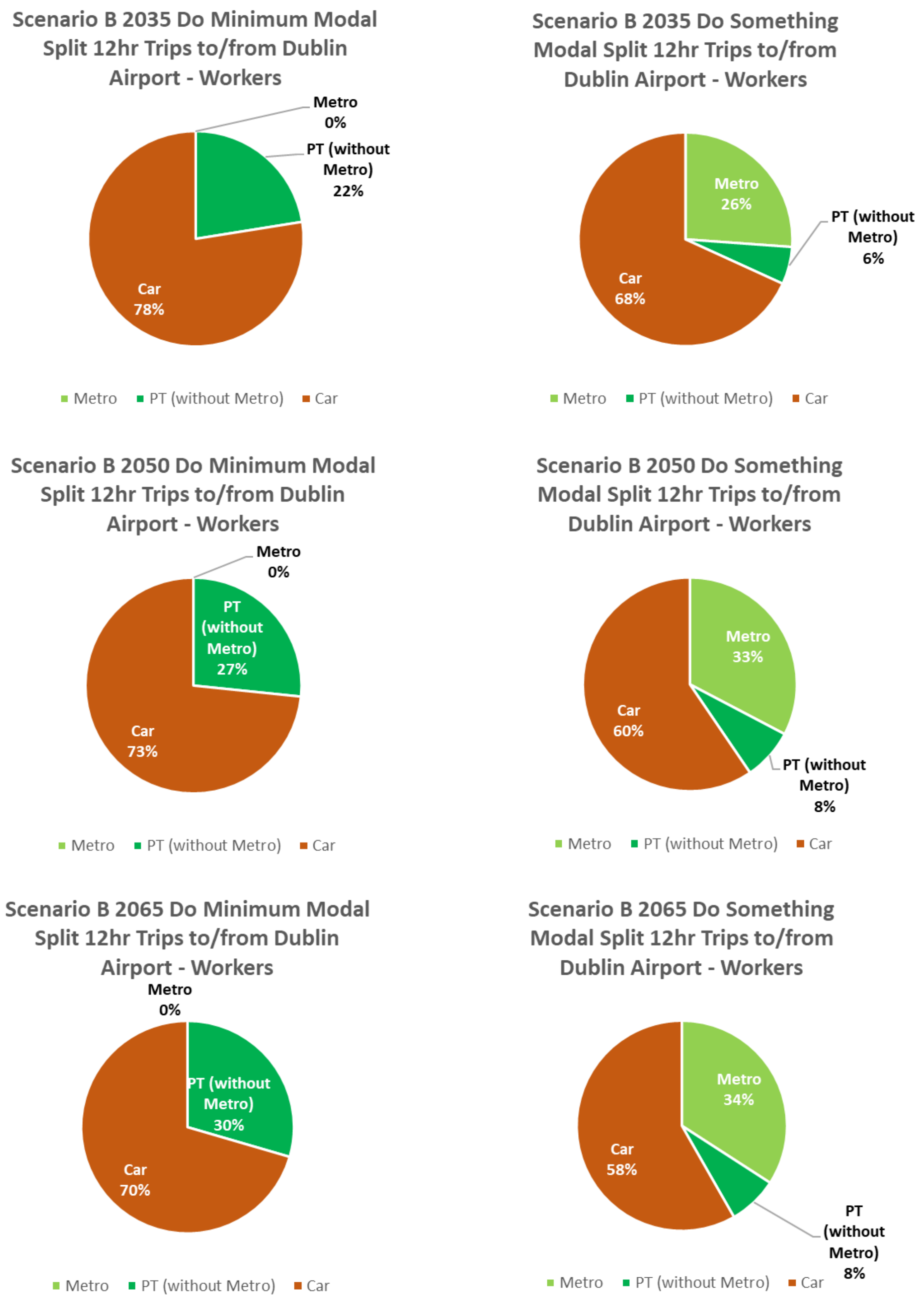


Figure 6.6: Change in Mode Share for Airport Workers- Scenario B 12hr

In Scenario A the following changes to journey times are observed:

- In the 2035, 2050 and 2065 AM period, public transport journeys from Dublin Airport to areas outside of the M50, including Blanchardstown and Sandyford will see savings times of approximately 30 minutes when the proposed project is in place.
- Public transport journeys from Dublin Airport to key Dublin City Centre locations such as O'Connell Street and St. Stephen's Green will see significant time savings between 14 and 22 minutes across the 2035, 2050 and 2065 AM period.
- Public transport journeys from Dublin Airport to areas in north Dublin, such as Swords Pavilion and Swords East, will see savings of approximately 10 minutes in the 2035, 2050 and 2065 AM period.

In Scenario B the following changes to journey times are observed:

- In the 2035, 2050 and 2065 AM period, public transport journeys from Dublin Airport to areas outside of the M50, including Blanchardstown and Sandyford will see savings times of between 23 and 30 minutes when the Project is in place.
- Public transport journeys from Dublin Airport to key Dublin City Centre locations such as O'Connell Street and St. Stephen's Green will experience significant time savings between 17 and 24 minutes across the 2035, 2050 and 2065 AM period.
- Public transport journeys from Dublin Airport to areas in north Dublin, such as Swords Pavilion and Swords East, will see savings of around 10 minutes in the 2035, 2050 and 2065 AM period.

6.1.2 Traffic Impact Assessment

Given the nature of the Project as a new public transport corridor, there are unlikely to be any vehicular traffic impacts during the Operational Phase. Moreover, it is anticipated that the development of a significant public transport intervention, providing a fast, efficient and reliable transit to the Airport and Dublin City Centre, will instead reduce traffic impacts through facilitating a modal shift from private car onto public transport. Furthermore, it is envisaged that the Project will provide an attractive alternative for journeys that are currently made by bus, therefore it is likely that there will be a shift from existing bus services onto the Project, resulting in a reduction in bus, taxi and private car trips on the road network at Dublin Airport.

Figure 6.7 presents the changes in Car mode share along the alignment in Scenario A 2065 AM peak hour, with Figure 6.8 presenting the same for Scenario B 2065 AM peak hour. At Dublin Airport, the Car mode share decreases by 5 to 10 percentage points in Scenario A 2035 when the Project is in place during the AM peak hour. This increases to a 10 to 20 percentage point reduction in 2065. Similar results can be seen in Scenario B, with a 10 to 20 percentage point reduction in Car mode share in zones around Dublin Airport. In the PM period in Scenario A, Car mode share reduces by up to 20 percentage points across all years.

Over the 12hr period, the zones within a 2km radius of Dublin Airport Station see a reduction of over 1,900 car trips between the Scenario A 2035 Do Minimum and Do Something scenarios, reaching a reduction of over 2,600 trips in Scenario A 2050. In 2065, there is a reduction of 3,108 car trips between the Do Minimum and Do Something scenarios. In Scenario B, these zones see a reduction of over 1,500 car trips between the 2035 Do Minimum and Do Something scenarios, increasing to a reduction of 2,500 car trips in 2050. 2065 sees a reduction of 2,600 car trips between the Do Minimum and Do Something scenarios.

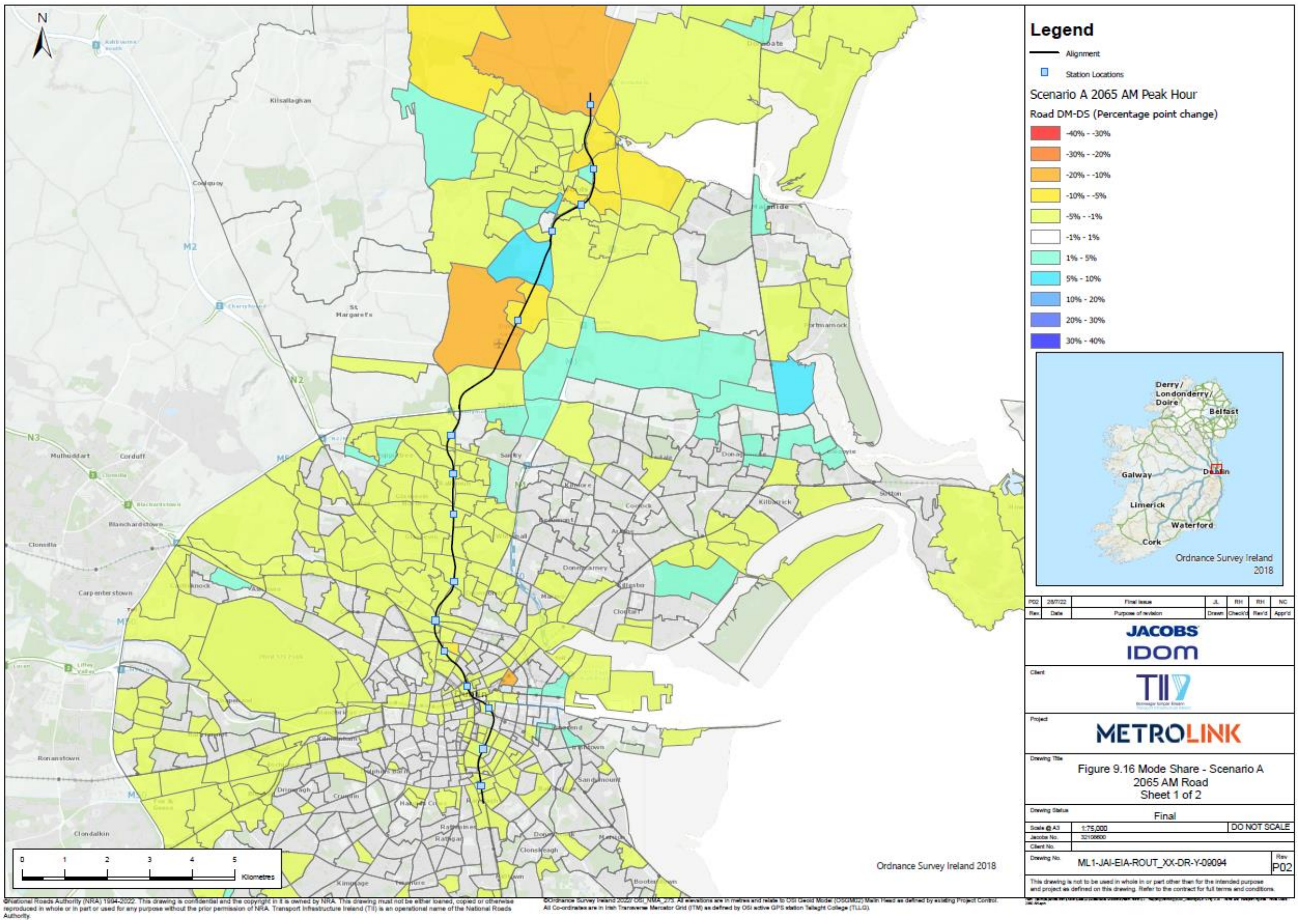


Figure 6.7: Changes in Car Mode Share in Scenario A 2065 AM Peak Hour

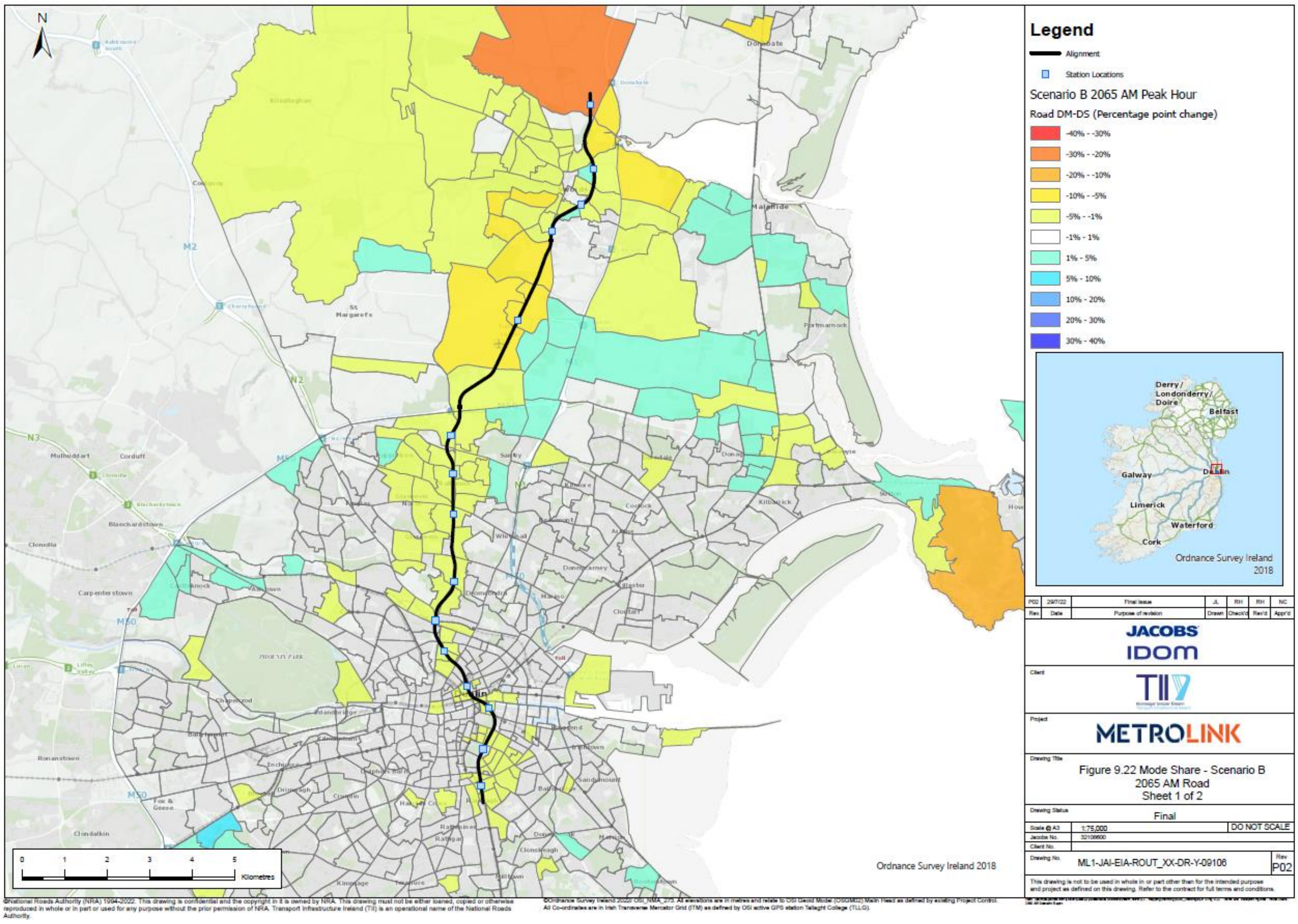


Figure 6.8: Changes in Car Mode Share in Scenario B 2065 AM Peak Hour

6.1.3 Pedestrian Impact Assessment

An assessment of the impact on pedestrian movements within Dublin Airport due to the Project has been undertaken. The assessment work utilises static analysis tools of the Transport for London (TfL) Pedestrian Comfort Analysis. This use of static analysis does not take into account the impact that passenger luggage may have.

The results of the pedestrian assessment, shown in Table 6.2, indicate that in the opening year AM peak period all footways will have experience ‘Comfortable’ conditions during the peak hour flow, with the exception of the footway from the station to Terminal 1, which will have an ‘Acceptable’ level of comfort during peak flows. During periods of maximum activity, all links will experience sufficient levels of comfort, however they may need reassessed in the future.

Table 6.2: Footway Assessment Results - Opening Year AM peak period

Footway Section	PCL (Peak Hour Flow)	Impact	PCL (Av. Maximum Activity)	Impact
From Terminal 1 Boarding the Project	**A**	The footway on this site should be comfortable for its intended use at most times. However, you may need to reassess the site in future.	**B**	This level of comfort is appropriate for periods of additional stress for all Area Types
Alighting the Project to Terminal 1	**B+**	The footway on this site should be comfortable for its intended use at most times. However, you may need to reassess the site in future.	**C**	This level of comfort is appropriate for periods of additional stress in Office and Retail and Transport Interchange sites.
Terminal 2 Boarding and Alighting	**A-**	The footway on this site should be comfortable for its intended use at most times. However, you may need to reassess the site in future.	**C+**	This level of comfort is appropriate for periods of additional stress in Office and Retail and Transport Interchange sites.
Office Lands B&A	**A-**	The footway on this site should be comfortable for its intended use at most times. However, you may need to reassess the site in future.	**B-**	This level of comfort is appropriate for periods of additional stress for all Area Types

6.1.3.1.1 Dublin Airport – Microsimulation VISWALK Model

In recognition of the potentially complex routing and road crossing behaviour at this site, a VISWALK model was also produced for the area surrounding the station, the extent of this model is illustrated in Figure 6.10. The modelled layout includes the main roads in Dublin Airport, as well as the associated major signalised junctions and crossings. As well as these aspects, it also includes the numerous crossings within Dublin Airport that connect bus termini and terminals, as well as surrounding areas. The Dublin Airport MicroSim Report further details the modelled process, model demands and model development.

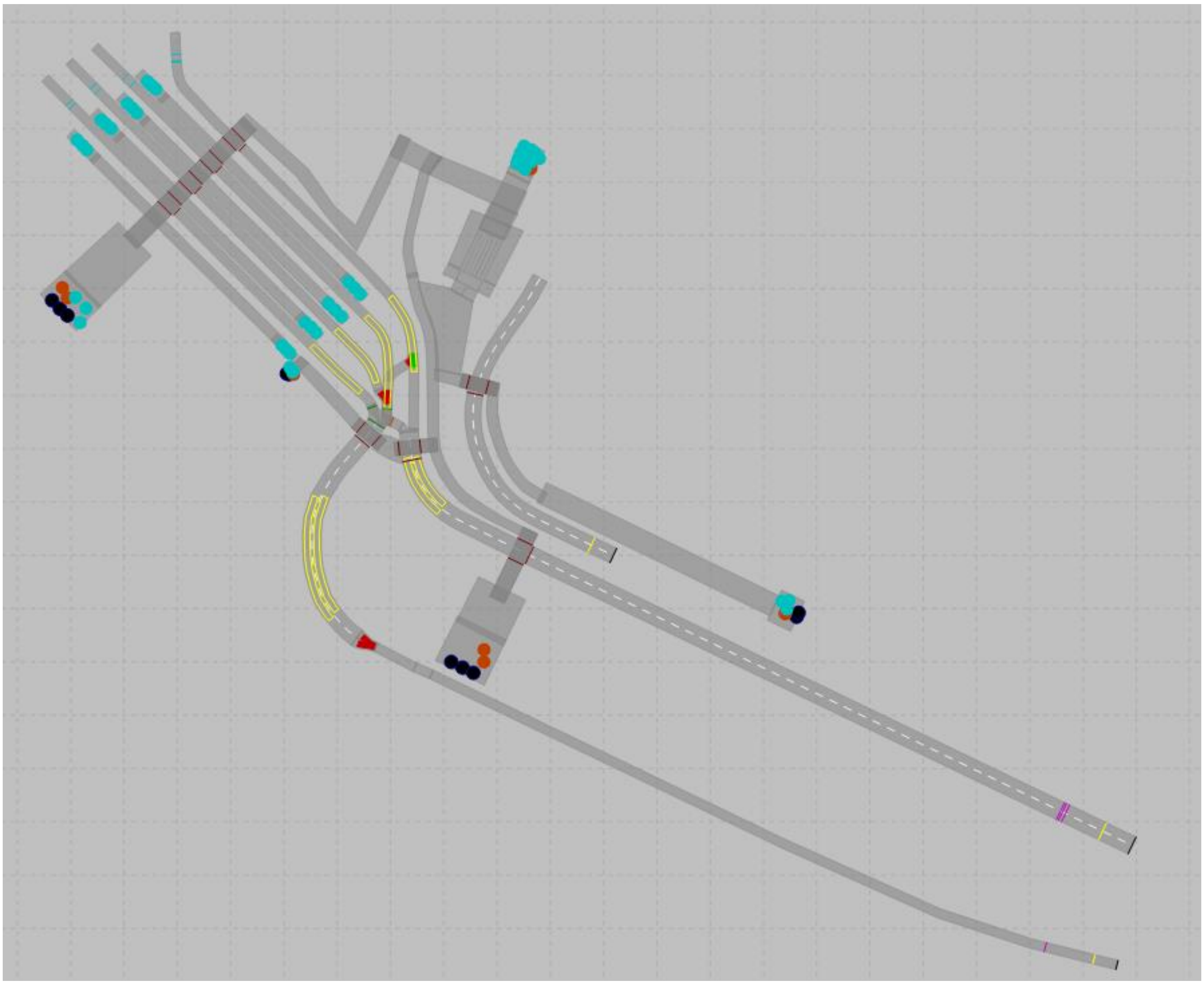


Figure 6.9: Extents of VISWALK model

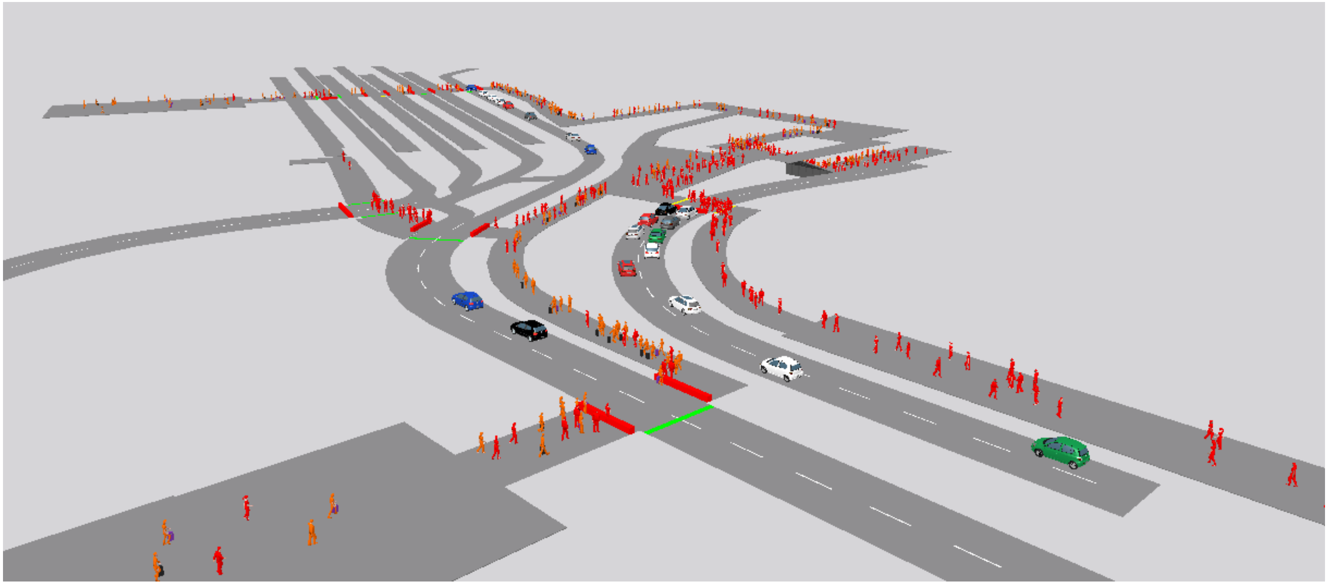


Figure 6.10: Dublin Airport - VISWALK Model Simulation

Level of service data has been recorded from the model in order to assess the performance of the network with the Project in place. The level of service criteria is showing in Figure 6.11 and categorises the performance of the network with regard to pedestrian density and delay.

The level of service heat map for the 2035 AM peak is shown in Figure 6.12, whilst the 2035 PM peak is shown in Figure 6.13. The results demonstrate that the network operates with an acceptable level of service in the majority of locations. Some delay at specific locations on the network, such as the waiting areas at signalised pedestrian crossings, is likely due to the high pedestrian demand and it is considered that the overall level of service on the network is acceptable.

Fruin's Level of Service	Average area module		
	Walkway [m²/ped]	Stairs [m²/ped]	Queue [m²/ped]
A	>3.24	>1.85	>1.21
B	3.24-2.32	1.85–1.39	1.21-0.93
C	2.32-1.39	1.39-0.93	0.93-0.65
D	1.39-0.93	0.93-0.65	0.65-0.28
E	0.93-0.46	0.65-0.37	0.28-0.19
F	<0.46	<0.37	<0.19

Figure 6.11: Fruin's Scale Level of Service key representing A as least congested and F as heavily congested

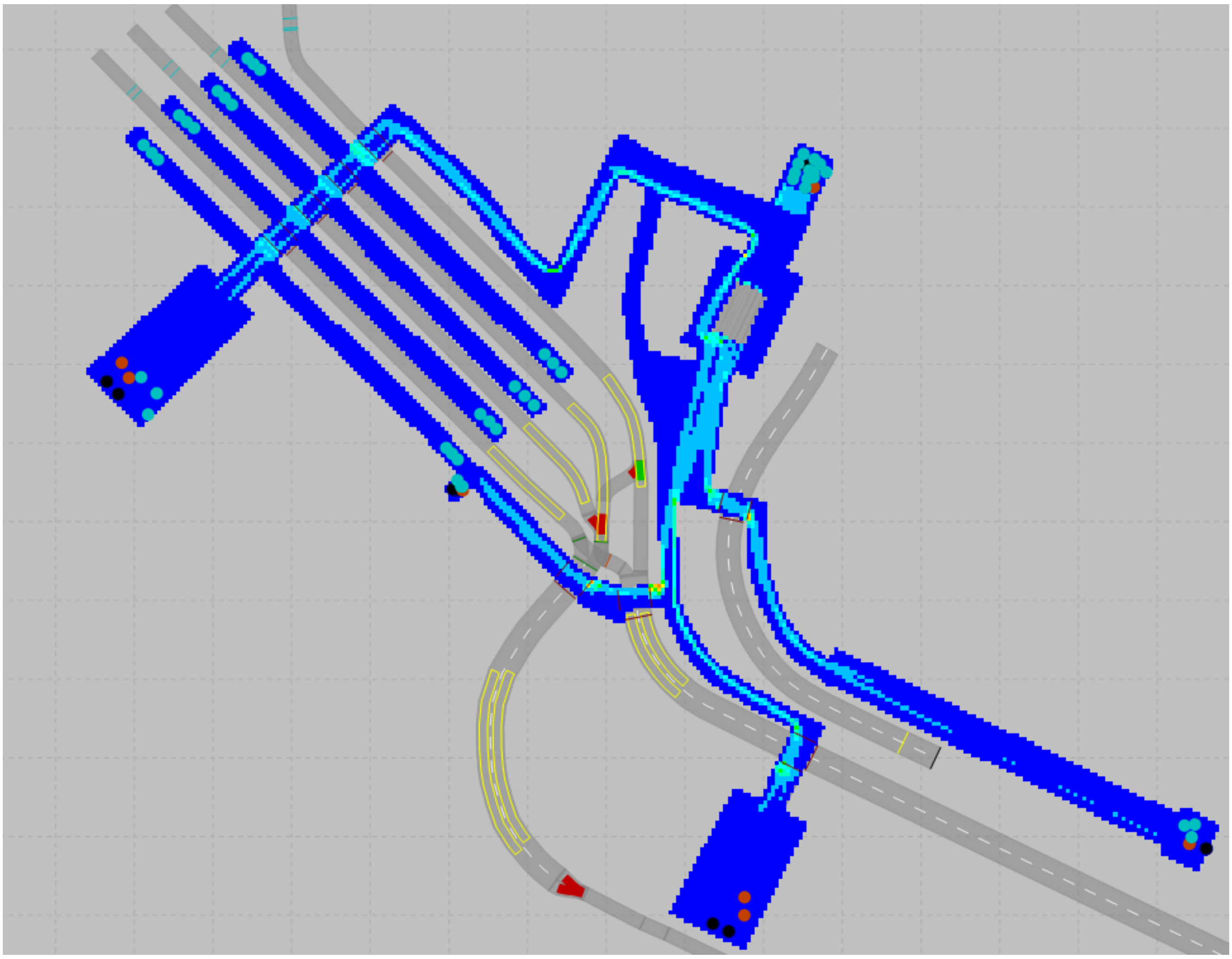


Figure 6.12: Dublin Airport LOS heat map for Scenario B 2035 AM peak

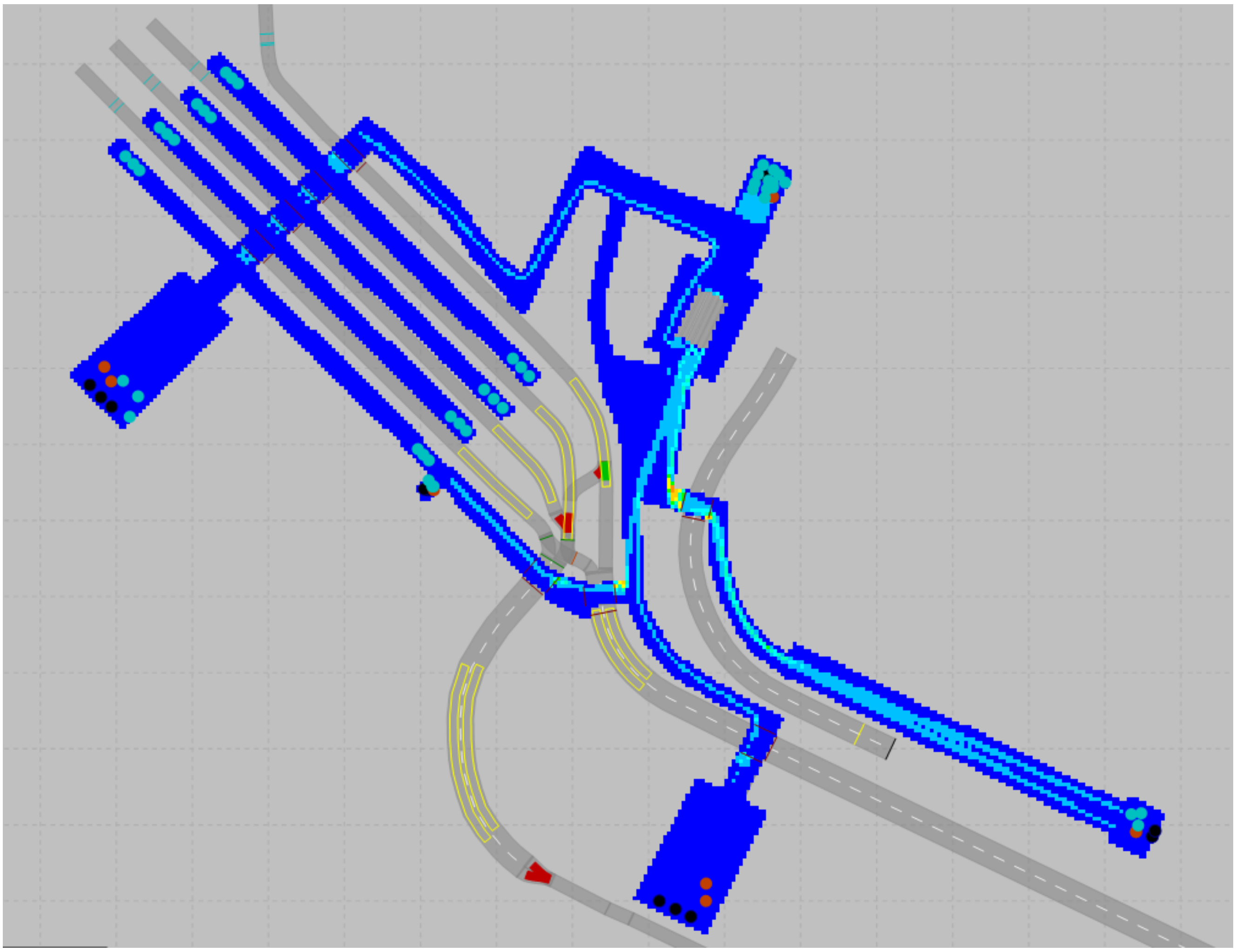


Figure 6.13: Dublin Airport LOS heat map for Scenario B 2035 PM peak

In summary, the microsimulation model for Dublin Airport performs well with no areas of excessive congestion or bottlenecks for pedestrians in the modelled year of 2035. A modelled scenario for 2050 is also under preparation but is not finalised and therefore has not been included within this report.

6.1.4 Cycling Impact Assessment

Given the nature of the station as an airport the methodology utilised for determining cycle demand at the other stations is not applicable at Dublin Airport.

A provision of 72 cycle spaces will be provided at the station. This will accommodate workers and passenger that may cycle to the station to travel into Dublin City Centre or to Swords. It is not anticipated that the Project's cycle parking will be long stay cycle parking (1+day) for passengers at Dublin Airport. There will be no change to the Quality of Service of the cycle infrastructure at Dublin Airport during the Operational Phase.

6.1.5 Road Safety

A Stage 1 Road Safety Audit has been undertaken for all of the proposed highway works for the Project. This is under a separate cover.

7. Summary

In Scenario A, Dublin Airport will facilitate approximately 50,700 passenger movements over the 12hr peak period (07:00-19:00) in 2035, rising to over 74,200 in 2050 and over 97,800 in 2065. In Scenario B, Dublin Airport will facilitate approximately 51,600 passenger movements in 2035, rising to over 82,700 in 2050 and over 98,600 in 2065.

It is anticipated that Project passengers at this location will be mix of terminal workers, office workers and terminal passengers. The analysis indicates that Car has the highest mode share for workers (in both terminals and offices), whereas the majority of passengers travel by public transport in the AM peak hour.

Given the nature of the proposed development as a new public transport corridor, there are unlikely to be any additional vehicular trips during the Operational Phase, instead it is anticipated that the development of a significant public transport intervention, providing a fast, efficient and reliable transit between Dublin Airport and Dublin City Centre, will instead reduce traffic impacts through facilitating a modal shift from private car onto public transport, while also providing an attractive alternative for journeys that are currently made by bus.

The Project will result in increases in PT mode share of between 10 percentage points and 20 percentage points in the zones around the station in Scenario A 2065 during the AM period, with an increase of up to 10 percentage points in Scenario B 2065 in the zones around the station. Similarly, there will be a reduction in Car mode share of up to 20 percentage points in the in both scenarios in 2065. In Scenario A 2065 there is a reduction of 3,100 car trips in zones within 2km of the station between the Do Minimum and Do Something scenarios over the 12hr period. In Scenario B 2065, there is a reduction of 2,600 car trips.

The Project will result in improvements to the PT journey times for people in the area, such as a saving of approximately 30 minutes between Blanchardstown and Sandyford and Dublin Airport. PT journeys between Dublin Airport and key Dublin City Centre locations, such as O'Connell Street and St. Stephen's Green see savings of up to approximately 20 minutes when the Project is in place.

The results of the VISWALK assessment demonstrate that the pedestrian network operates with an acceptable level of service in the majority of locations in the Scenario B 2035 AM peak hour. Some delay at specific locations on the network, such as the waiting areas at signalised pedestrian crossings, is likely due to the high pedestrian demand and it is considered that the overall level of service on the network is acceptable in the Opening Year. A modelled scenario for 2050 is also under preparation but is not finalised and therefore has not been included within this report.

Contents

1. Introduction

1.1 Background

Jacobs/IDOM has been commissioned to undertake the Environmental Impact Assessment Report (EIAR) in support of the proposed Dublin MetroLink project (hereafter referred to as the Project). The EIAR is being prepared to assess the environmental impacts of the Project, including in relation to traffic and transport.

This Traffic and Transportation Assessment (TTA) assesses the operational impacts associated with the Northwood station on the Traffic and Transport network in the local area. TTA's have been prepared for each individual station as well as an overall TTA for the Project.

Jacobs/IDOM has also been commissioned to undertake a scheme traffic management plan (STMP). The STMP is a standalone report within the EIAR. The STMP assesses the impact of the construction of the Project on all road users and proposes mitigation measures where appropriate.

A summary of the TTAs and STMP will be included within the Traffic and Transportation chapter of the EIAR.

1.2 Assessment Scenarios

In order to provide a rounded assessment of the Project, its impacts have been reviewed for a range of future years, and in the context of two alternative future scenarios. The forecast years are 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). As outlined in Table 1.1, Scenario A includes the Project and committed transport schemes only, while Scenario B includes a range of further planned schemes depending on the forecast year.

Table 1.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project
Do Minimum Scenario	Committed transport schemes in the absence of the Project
Do Something - Scenario A	Scenario with the Project and committed transport schemes only.
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for Opening year (2035) and planned schemes under the Transport Strategy for the GDA for the Design Year (2050) and the Forecast Year (2065)

Committed transport schemes in the Do Minimum scenario and in Scenario A, that have been progressed through planning and are either under construction or are programmed into the capital expenditure budget, include, but are not limited to:

- Luas Green Line Capacity Enhancement- Phase 1;
- BusConnects Dublin Area Bus Network Redesign; and,
- Bus Connects Fares and Ticketing.

Scenario B represents the likely future receiving environment and is based on the delivery of the schemes identified within the National Development Plan for 2035, and on the implementation of the NTA's Greater Dublin Area (GDA) Transport Strategy for 2050 and 2065. As such, this scenario considers the cumulative impacts of interactions between other projects that are most likely to impact on transport movements in the area. Schemes included in this scenario are, but are not limited to:

- Luas Green Line Capacity Enhancement- Phase 2;
- Luas Finglas;
- Luas Lucan;
- BusConnects Core Bus Corridors (planned 16 corridors); and
- DART+.

More information on each modelled scenario is available in the Transport Modelling Plan (Appendix A9.3).

1.3 Project Overview

The Project will be a high-capacity, high frequency rail line running from Swords to Charlemont, linking Dublin Airport, Irish Rail, the Dublin Area Rapid Transit (DART), Dublin Bus and Luas services, improving integration across public transport network in the Greater Dublin Area (GDA).

As well as linking major transport hubs, the proposed Project will connect key destinations including Swords, Ballymun, the Mater Hospital, the Rotunda, Dublin City University and Trinity College with much of the 19-kilometre route running underground.

When operations commence, there will be a service every 3 minutes during peak periods. This can rise to a service every 90 seconds, with the system capable of carrying a peak line flow of 20,000 passengers per hour in each direction.

1.3.1 Northwood Station

Northwood Station is located diagonally under the R108 Ballymun Road close to the junction with Northwood Avenue, and close to Gulliver's Retail Park on the east side of the R108, with the north-eastern and south-western ends extending into undeveloped countryside. Figure 1.1 illustrates the location of the proposed Northwood Station. This location will also be the launch site for the Tunnel Boring Machine (TBM) which will tunnel as far as Charlemont on the south side of Dublin City Centre.

In the vicinity of Northwood Station, the R108 Ballymun Road southbound carriageway is a dual two-lane carriageway, with a slip road for the left-hand turn into Gulliver's Retail Park, which continues as a three-lane carriageway south of the junction with Gulliver's Retail Park. The northbound carriageway comprises a three-lane carriageway, with the inside lane providing the right-hand turn into Gulliver's Retail Park at the junction. It then continues as a two-lane carriageway, widening to a third lane for the slip road onto the right- hand turn into St Margaret's Road to the north of the station. There is also a cycle path and footpath on both sides of the R108 Ballymun Road and an existing bus stop on the northbound carriageway between the junction into Gulliver's Retail Park and the turning for St Margaret's Road.

Pedestrians will be able to access the underground platform without crossing the R108 as the station will be provided with two main entrances on each side of the road. Each entrance will have a main-stairs and a passenger lift.

Public transport interchange facilities include two new bus stops along both sides of the R108 and designated bus lanes as part of the Bus Network Redesign. A pedestrian crossing will be provided to the south of the bus stops to facilitate safe access to both station entrances. Cycle lanes will also be provided on both sides of the R108, with designated cycle crossing facilities. The station also lies within the GDA Cycle Network, with the R108 designated as a Secondary route, a Feeder route on St Margaret's Road, and Santry Greenway in close proximity to the station. The station will also provide for 204 bicycle parking spaces.

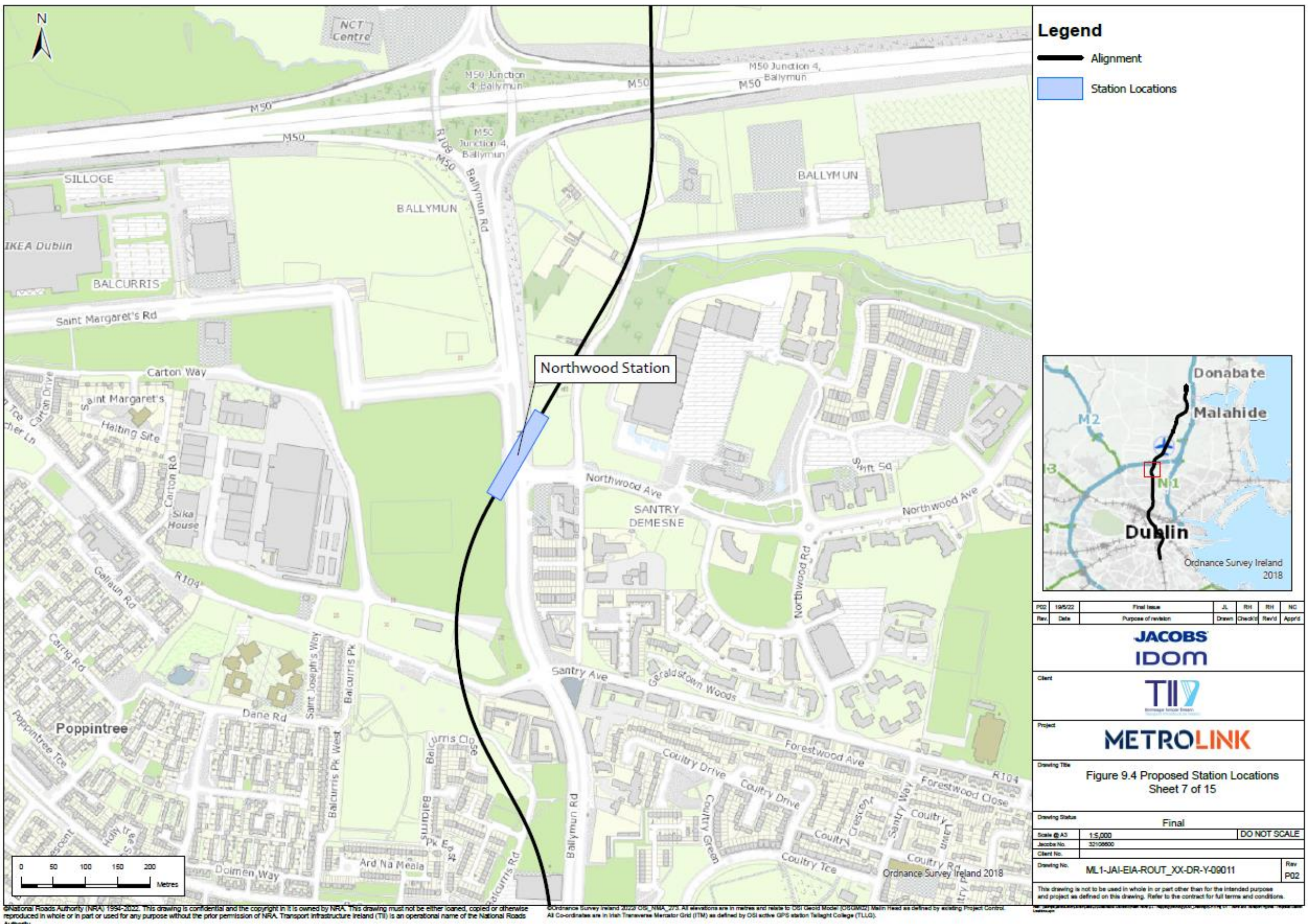


Figure 1.1: Proposed Station Location of Northwood Station

2. Policy Context

Reference should be made to the Chapter 3 of the Overall Project TTA, and Planning Policy Report (ML1-JAI-PLD-ROUT_XX-RP-Y-00020) for further detail on the overall project in relation to key national and regional policies.

This section will focus on an assessment of the Northwood Station proposals in relation to the following key local policies:

- Fingal County Council Development Plan (2017 – 2023);
- Draft Fingal County Council Development Plan (2023-2029);
- Dublin City Council Development Plan (2016 – 2022);
- Draft Dublin City Council Development Plan (2022-2028) and
- Ballymun Local Area Plan.

The National Spatial Strategy states that in order to promote sustainable development, it is essential to consolidate the physical growth of Dublin City. This should be supported by effective land use policies for the urban area which underpin increased investment in high quality public transport infrastructure. It outlines a number of requirements that are key to creating a compact and economically vibrant city including;

- The effective integration of land use and transportation policy: and
- Facilitating the movement of people and goods through an effective public transport system.

The Regional Planning Guidelines promote the consolidation of development within the metropolitan area, and the achievement of sustainable densities in tandem with a much-enhanced multi-modal transport system.

The Draft Transport Strategy for the Greater Dublin Area 2022-2042 and the Regional Planning Guidelines are required under legislation to be consistent with each other, and therefore the purpose of the Strategy is "to contribute to the economic, social and cultural progress of the Greater Dublin Area by providing for the efficient, effective and sustainable movement of people and goods." The Strategy sets out the necessary transport provision for the period up to 2035, to achieve this objective for the region, including the provision of the Project.

2.1 Fingal County Council Development Plan (2017 – 2023)

The aim of the Fingal County Council Development Plan is to 'plan for and support the sustainable long-term development of Fingal as an integrated network of vibrant socially and economically successful urban settlements and rural communities, strategic green belts and open countryside, supporting and contributing to the economic development of the County and of the Dublin City Region'.

- Within the Development Plan Objectives defined for Santry, 'Objective SANTRY 5' seeks to 'prepare and implement a Masterplan for lands identified at Northwood' which would:
- Facilitate provision of an underpass to include provision for a car, bus, cycle, and pedestrian link to link lands east and west of the R108 to enhance connectivity.
- Allow the re-location of existing units to facilitate connectivity to the proposed Northwood Metro Stop; and
- Facilitate provision of a direct access route from Old Ballymun Road through Northwood. Development shall enhance connectivity to the proposed Northwood Metro Stop.

The area around the proposed Northwood Station has been classified in the Santry specific Development Plan as 'Metro Economic Corridor (MEC)' (see Figure 2.1). This zoning will 'facilitate opportunities for high-density mixed-use employment generating activity and commercial development and support the provision of an appropriate quantum of residential development within the MEC'.

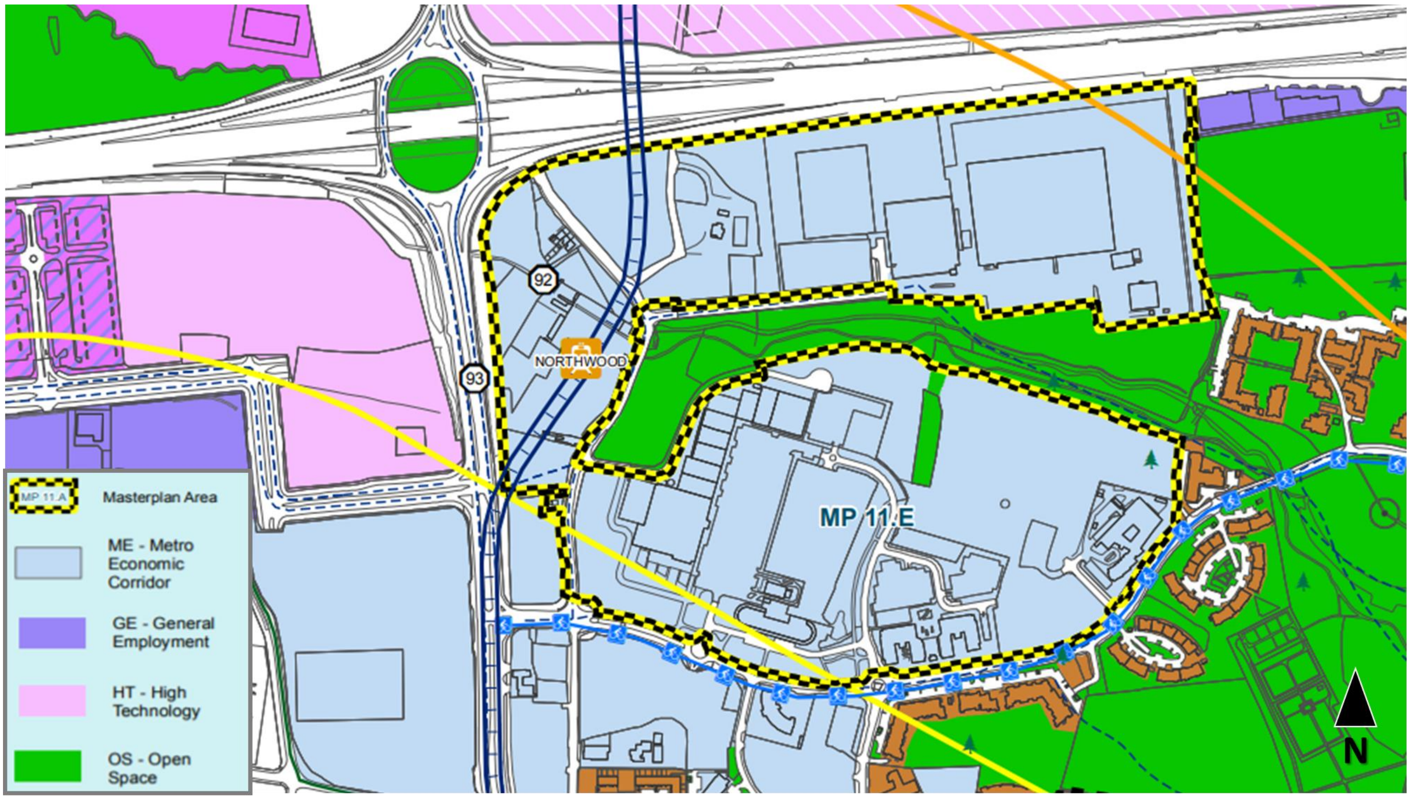


Figure 2.1: Zoning Map for Fingal South

2.2 Draft Fingal County Council Development Plan (2023-2039)

Building on the success of the Fingal County Council Development Plan (2017-2023), the Draft Fingal County Council Development Plan (2023-2029) recognises that the 'area lying in close proximity to the administrative boundary with Dublin City Council...has experienced significant growth in recent years, comprising a mix of residential and expanding employment.' Future transportation improvements, such as the Northwood MetroLink station and BusConnects 'will benefit ongoing residential and commercial expansion within the area.'

Policy CMP18- Public Transport:

- Support the provision of high-quality public transportation system that is accessible to all to serve the needs of the County and to enable a significant shift from car-based travel to public transport.

Objective CMO22- Enabling Public Transport Projects:

- Support the delivery of key sustainable transport projects including MetroLink…so as to provide an integrated public transport network with efficient interchange between transport modes to serve the needs of the County and the mid-east region in collaboration with the NTA, TII and Irish Rail and other relevant stakeholders.

2.3 Dublin City Council Development Plan (2016 – 2022)

The Dublin City Development Plan aims to provide an integrated spatial framework to develop the city in an inclusive way to improve the quality of life for the citizens and to ensure Dublin City is an attractive place to live and work.

The Development Plan includes specific policies and objectives of relevance to the Project:

- Section 8.5.3 – Public Transport. "DCC policy on public transport will be implemented in collaboration with the NTA's Transport Strategy for the Greater Dublin Area 2016–2035. Key public transport elements of this strategy include: Metro North and South (now called MetroLink), and the DART expansion programme including DART underground".

- MT3 – It is the Policy of Dublin City Council "To promote and facilitate the provision of Metro Link, all heavy elements of the DART Expansion Programme including DART Underground (rail interconnector), the electrification of existing lines, the expansion of Luas, and improvements to the bus network in order to achieve strategic transport objectives".

2.3.1 Ballymun Local Area Plan

Land Use Zoning within the plan is derived from its 'Core Strategy', which seeks to ensure a balanced approach in land uses whilst ensuring that the provision of necessary services, including public transport facilities, are in place to support planned growth. Lands in the nearby area of Northwood Station have been classified under Ballymun Local Area Plan as follows (see Figure 2.2):

- Lands west of the station (Ballymun Industrial Estate): set to provide for the creation and protection of enterprise and facilitate opportunities for employment creation.

- Lands south-west and south-east of the station: set to protect, provide and improve residential amenities.

- Lands south of the station (along Ballymun Rd): set to provide for and improve mixed-services facilities.

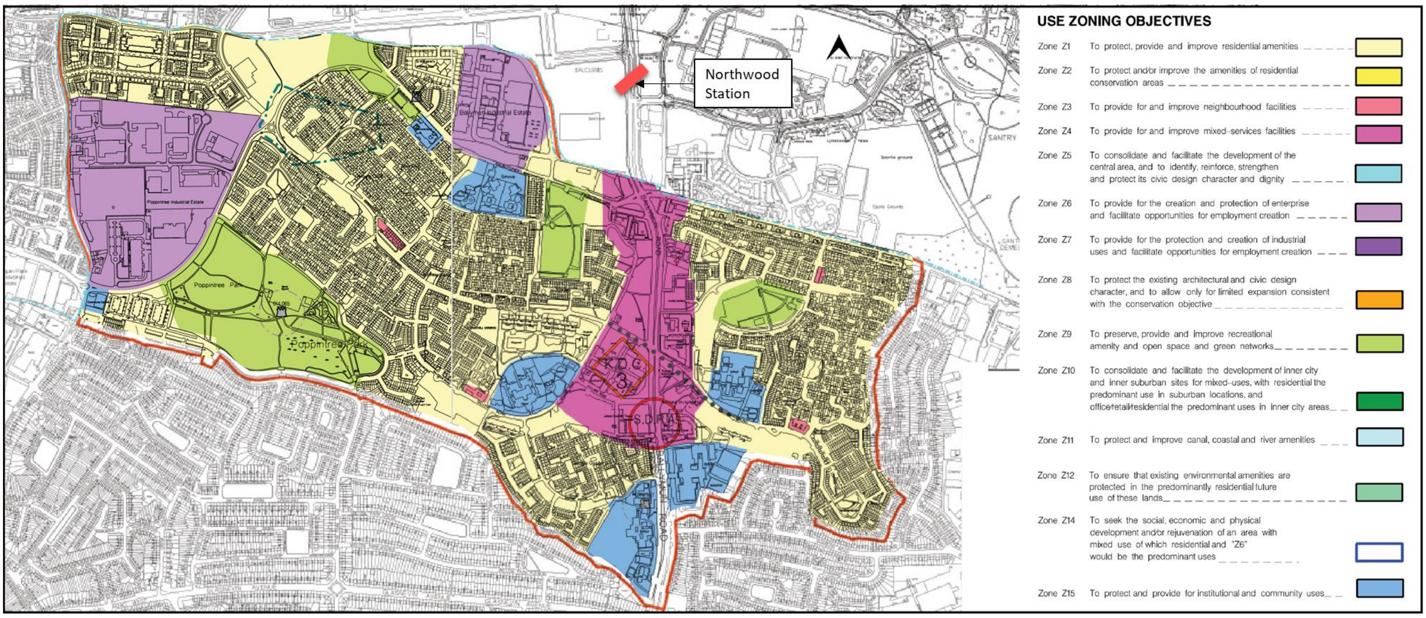


Figure 2.2: DCC Zoning Map in context of Ballymun LAP

Source: Ballymun Local Area Map 2017

2.4 Draft Dublin City Council Development Plan 2022-2028

Building on the objectives of the Dublin City Council Development Plan 2016-2022, the Draft Dublin City Council Development Plan 2022-2028 recognises the opportunities presented by the Project to achieve effective integration of land-use and transportation in the area.

SMT20: Key Sustainable Transport Projects:

- To support the expeditious delivery of key sustainable transport projects including MetroLink, BusConnects, DART+ and Luas Expansion Programme so as to provide an integrated public transport network with efficient interchange between transport modes, serving the existing and future needs of the city and region.

In addition, the Draft Plan highlights the role the Project will play in delivering opportunities for developing the public ream around proposed stations

3. Baseline Conditions

This section describes the existing receiving environment within the vicinity of the Northwood Station and the wider environs, and identifies the future receiving environment for all modes of transport if conditions are planned to change in advance of the construction of the Project, such as the delivery of other proposed infrastructure projects.

3.1 Existing Public Transport

As shown in Figure 3.1, the area surrounding the Northwood Station is served by several bus services with less than 15min frequencies, many of which have stops in close proximity to the station. Within a 600m buffer from the station there are approximately 10 bus stops, most of them located along the Ballymun Road (see Figure 3.2). The nearest bus stop is located at the east of the station with route 109A (from Busáras in Dublin to Kells) serving that specific location. Other relevant bus routes with stops within this buffer include route 4 –from Harristown towards Monkstown Avenue; route 155 from Ikea (Ballymun) towards Bray Rail Station; route 13 from Harristown towards Grange Castle; and route 17A from Kilbarrack Para to Blanchardstown Shopping Centre.

The proposed station is located along the R108, which is the main access road for buses coming from and going to Harristown Bus Depot.

(Base Source: www.busconnects.ie)

Figure 3.1: Existing bus network around Northwood Station

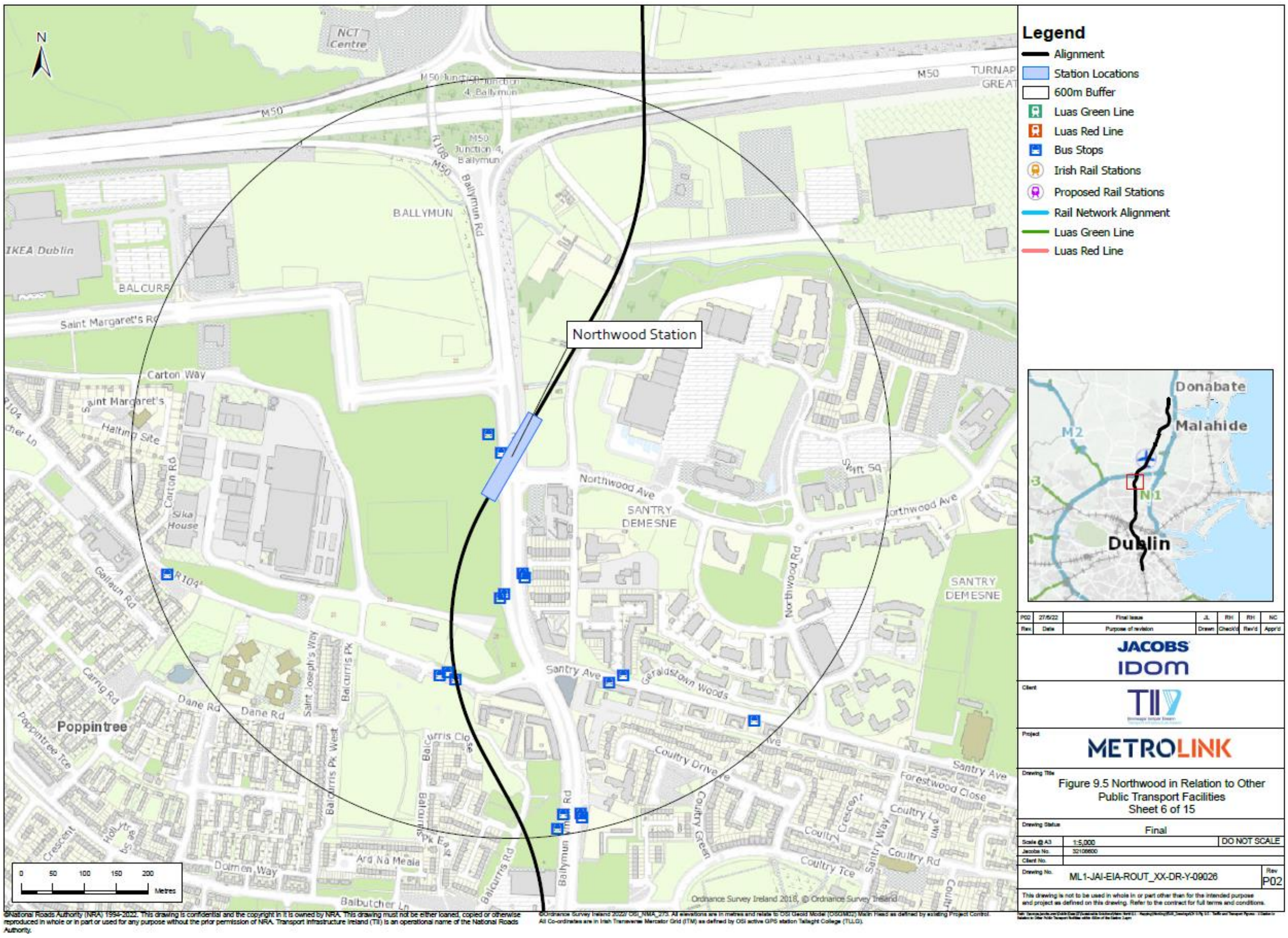
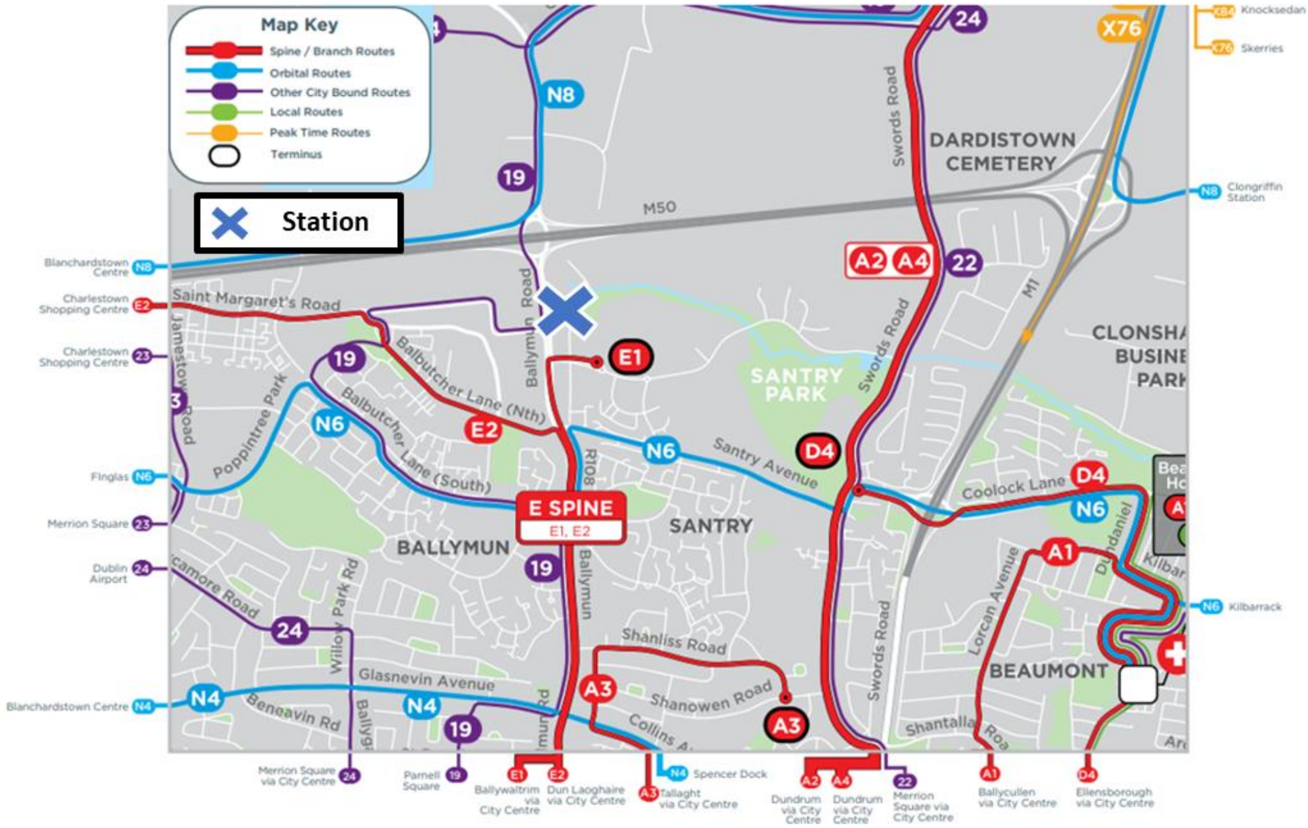


Figure 3.2: Transport facilities within 600m buffer

3.2 Future Receiving Environment – Public Transport Network

Figure 3.3 shows the location of Northwood Station as part of the Bus Network Redesign proposals. The station is located along E spine which offers frequencies between 8 to 20 minutes. It is also located in close proximity to orbital route N6 (Finglas to Kilbarrack) with a frequency between 10 and 15 minutes.



(Base Source: www.busconnects.ie)

Figure 3.3: Proposed Bus Network Redesign around Northwood Station

3.3 Existing Road Network

The road network in the vicinity of the Northwood Station comprises the R108 (Naul Road/ Ballymun Road), the M50 in the north, St Margaret's Road in the west, Old Ballymun Road and Northwood Avenue in the east and the R104 and Santry Avenue in the south-east, as present in Figure 3.4.

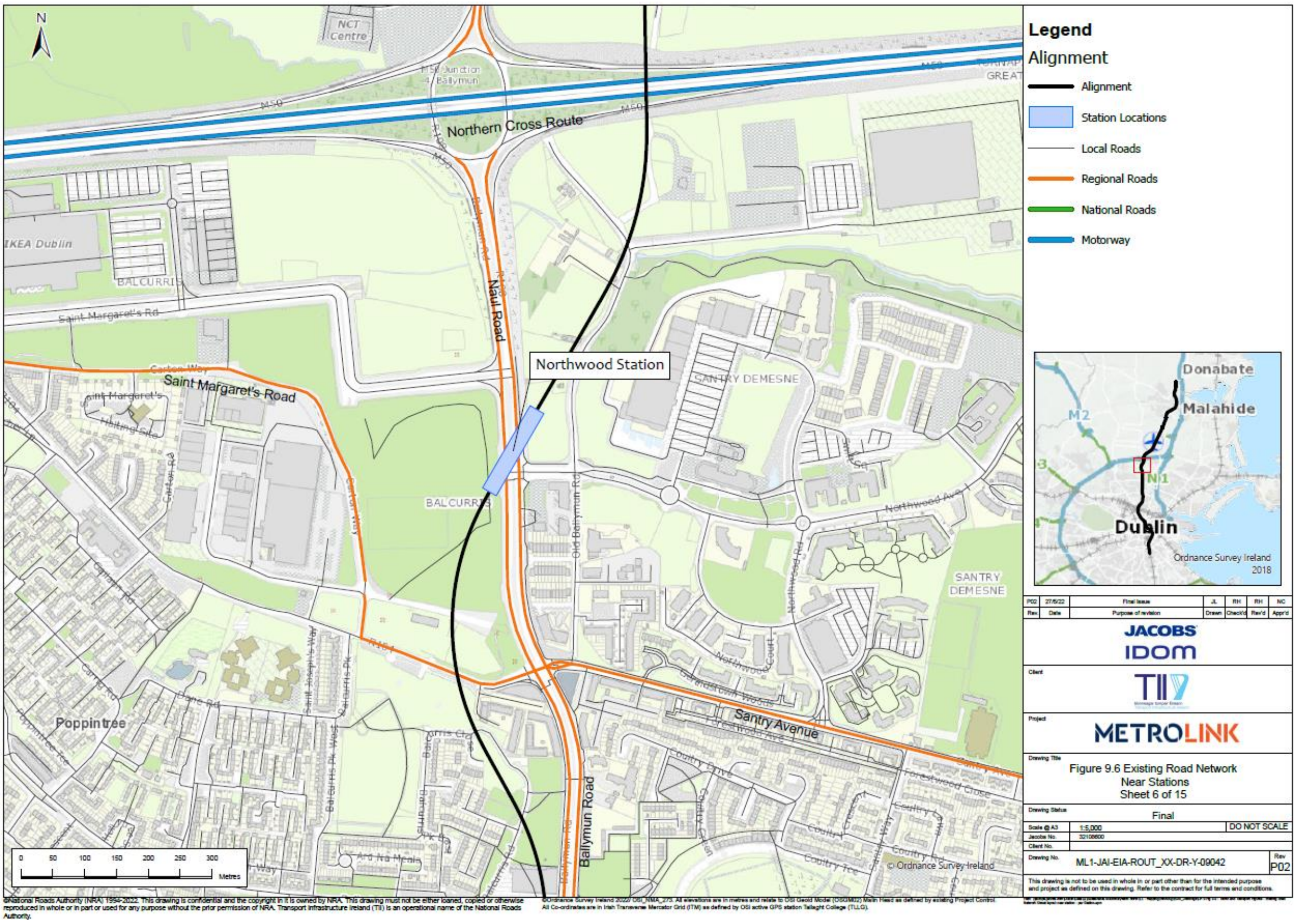


Figure 3.4: Street layout near Northwood Station

The R108 Ballymun Road is a dual carriageway and is part of the regional road network of the GDA. It provides links from the M50 in the north to Glasnevin in the south. In its most proximate section to the Northwood Station, the R108 Ballymun Road has three traffic lanes (between 9.5m and 10m wide) with no bus lanes in either direction.

St Margaret's Road is mostly surrounded by undeveloped land and provides access to IKEA and to the St Joseph's School. This road is a two-way carriageway of around 26m wide in its most proximate section to the station. Near to the Northwood Station, the westbound has three traffic lanes, one of which merges into a bus lane. The east bound comprises three traffic lanes with no bus lane present.

Old Ballymun Road is a single carriageway (around 7m wide) with one traffic lane per direction that provides access to the service area of the Gulliver's Retail Park and the Tesco Distribution Depot.

Northwood Avenue is a gated access road serving the Northwood area, which comprises Gulliver's Retail Park (public access), Northwood Business Campus and Northwood residences. The section of Northwood Avenue in the vicinity of the site has a total width of approximately 18.5m, with two traffic lanes per direction and no bus lanes.

Both R104 and Santry Road are single carriageways (6.2m and 7.5m wide, respectively) providing access from areas in the vicinity to the R108.

3.3.1 Junction Turning Counts

The Data Collection Report (ML1-JAI-TRA-ROUT_XX-RP-Y-00023) details the methodology and specification of traffic surveys undertaken for the Project. The survey locations relevant to Northwood Station are shown in Table 3.1. Vehicle classifications used for the survey were Car, LGV, OGV1, OGV2, PSV, Motorcycle and Pedal Cycle. PCUs values were also reported using appropriate conversion factors for each vehicle classification. The resulting PCU values from the survey results have been used for the LinSig modelling.

Demand flows were obtained from the turning counts and queue data from either observation from online traffic flow data sources or queue count surveys. Demand data has been used in all the assessment work undertaken.

Table 3.1: Survey Locations around Northwood Station

Junction	Type of Survey
R108 Ballymun Road / St Margaret's Road / Proposed Northwood Construction Site Access	Classified Junction Turning Count (CJTC)
R108 Ballymun Road / R104 Santry Avenue / Balbutcher Lane	CJTC
R108 Ballymun Road / Shangan Road Signalised Junction	CJTC

3.3.2 Base Traffic Flows

The 2018 base traffic flows for the AM and PM peak periods, for the junctions detailed in Table 3.1, are provided within Appendix A Traffic Flow Diagrams.

3.3.3 Forecast Traffic Growth

Forecast traffic growth rates have been obtained from the Eastern Regional Model (ERM) for future years 2035, 2050 and 2065, for the appropriate scenario.

3.4 Future Receiving Environment – Road Network

The BusConnects Core Bus Corridor proposals commence on the Ballymun Road at its junction with St. Margaret's Road, south of the M50 Junction 4. Between St. Margaret's Road and Shangan Road, a bus lane, two general traffic lanes and a segregated cycle track will be provided in each direction.

3.5 Existing Pedestrian Network

Pedestrian access is limited along the R108 Ballymun Road between the M50 and the proposed Northwood Station, as existing paths are only available on the western side of the carriageway. There is a pedestrian crossing at the St. Margaret's Road/R108 junction, which is provided with dropped kerbs, tactile paving and fencing to allow for safe crossing.

St. Margaret's Road, Northwood Avenue and the network around St. Joseph's School have footways approximately 2m wide. At the R104 to access St Joseph's School, there is a signalized pedestrian crossing with dropped kerbs and tactile paving.

A pedestrian comfort assessment has been undertaken on the baseline volumes of pedestrians on the network surrounding Northwood Station. Links were assessed against DCC guidance in the first instance, and then against the Transport for London (TfL) Pedestrian Comfort Calculator to determine the level of comfort for the available width. The full methodology adopted is detailed in the Overall Project TTA.

In the immediate surrounding to the proposed station the assessment shows that during AM peak, all footway provisions currently comply with the DCC guidance as is demonstrated in Figure 3.5. As such, the links did not progress to the TfL assessment.

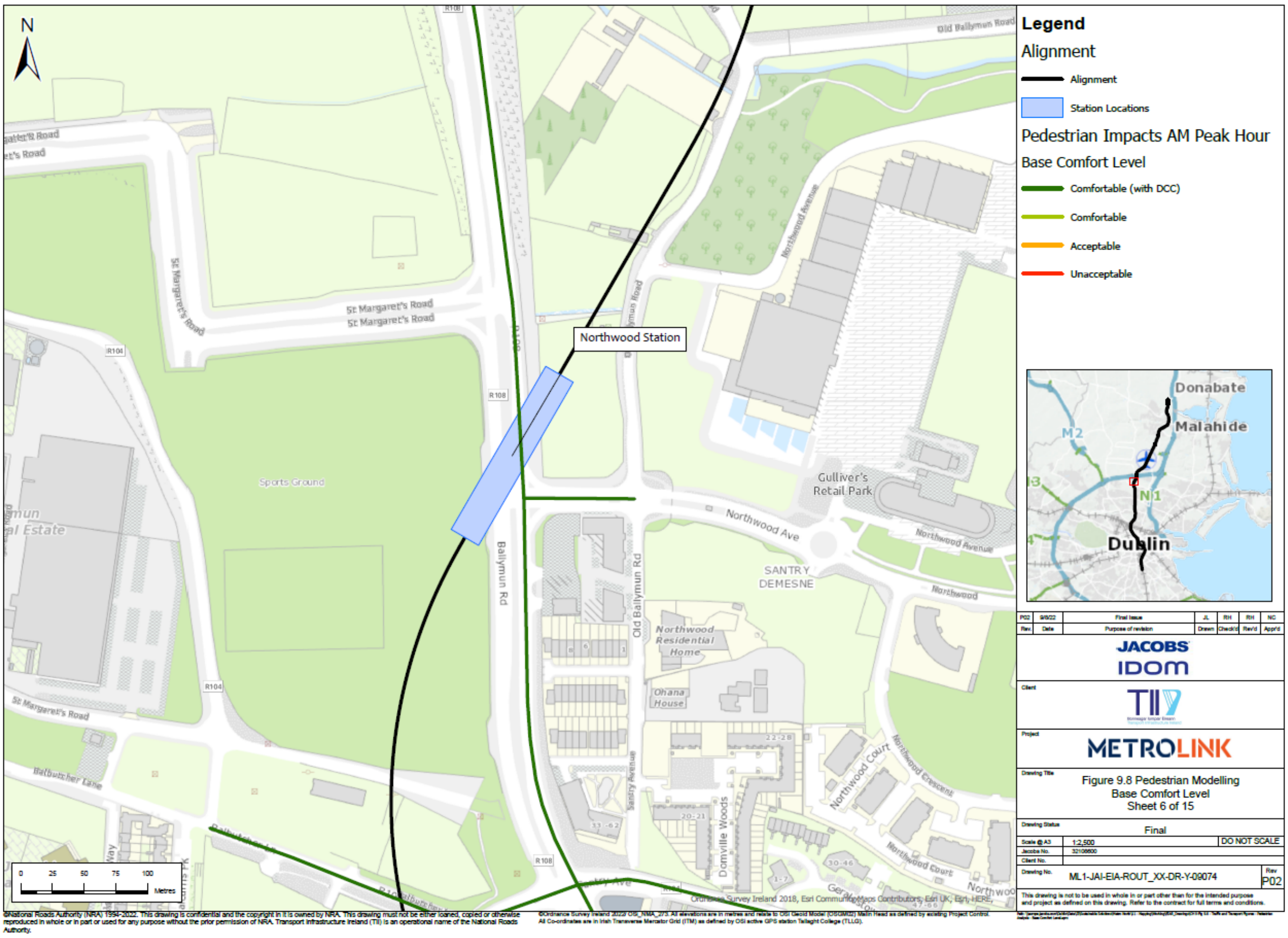


Figure 3.5: Pedestrian Comfort Assessment- Baseline Scenario

3.5.1 Pedestrian Link Counts

The Data Collection Report (ML1-JAI-TRA-ROUT_XX-RP-Y-00023) details the locations around Northwood Station where pedestrian surveys have been undertaken.

3.5.2 Baseline Accessibility Review

A baseline accessibility assessment has been undertaken to establish existing walking provision relevant to the proposed Northwood Station. Catchment maps prepared for the accessibility analysis for walking are based on two criteria, the average speed for each mode and the existing road network. Therefore, maps do not reflect existing access restrictions for private roads and motorised roads.

Figure 3.6 illustrates a 5min walking, 10min walking and 15min walking catchment from the Northwood Station. The immediate area surrounding Northwood Station is predominantly residential with retail commerce, business and industrial parks within 15min walking from the station. Table 3.2 below lists local amenities within this catchment.

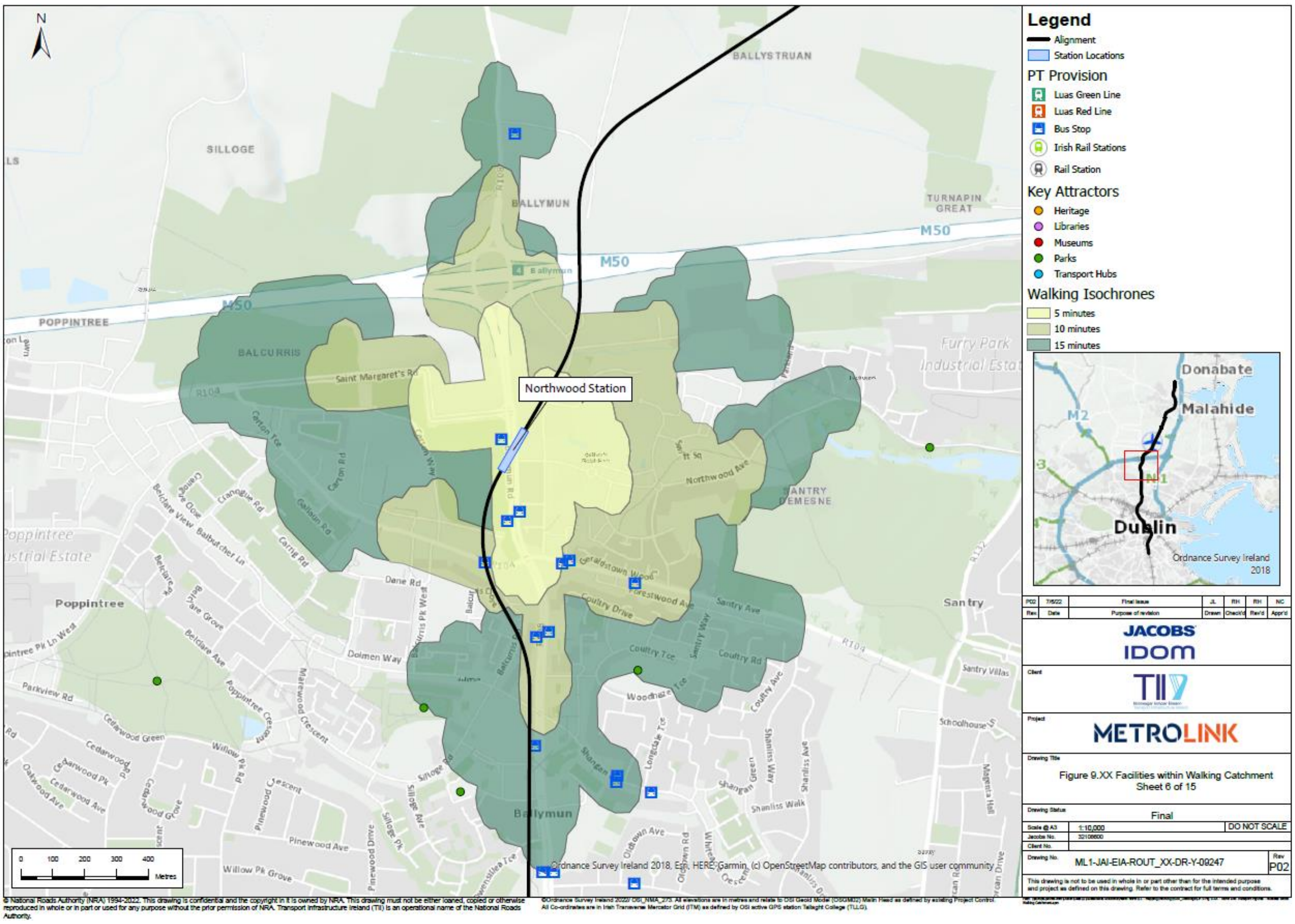


Figure 3.6: Northwood Station Walking Catchment Area

Table 3.2 : Local facilities and amenities within walking catchment area

Facilities within 5min walking	Facilities within 10min walking	Facilities within 15min walking
Gulliver's Retail Park at Northwood Ave	Ballymun Shopping Centre at Ballymun Road.	IKEA at St. Margaret's Road
Geraldstown House (Medical Centre) at Old Ballymun Road	Cara Care Centre Nursing Home at Northwood Road.	Ballymun Industrial Estate at Carton Way
EuroSpar at Old Ballymun Road	St. Joseph's School at Balbutcher Lane (R104)	Decathlon Ireland (proposed retail shop) at St. Margaret's Road
	Sports Surgery Clinic at Northwood Avenue.	Trinity College Sport Grounds
		Coultry Park at Coultry Road
		Ballymun East Community Centre at Woodhazel Close
		Ballymun Healthcare Facility at Ballymun Roadd
		DCU Summer School at Ballymun Road
		Old Ballymun Shopping Centre at Ballymun Road

3.6 Future Receiving Environment – Pedestrian Network

As part of the Bus Connects Core Bus Corridor proposals, the existing pedestrian footways and crossings at the St. Margaret's Road/R108 junction will be maintained. Additional pedestrian and cycle crossings will be provided at the R108/Northwood Avenue junction as part of the proposals.

3.7 Existing Cycle Network

The location of the Northwood station within the GDA cycle network is illustrated in Figure 3.7. The R108 Ballymun Road in the vicinity of Northwood Station is designated as a Secondary Route, changing to a Primary Route to the south of the station. St Margaret's Road and Northwood Avenue are designated as Feeder Routes, with the Santry Greenway to the north of the station.

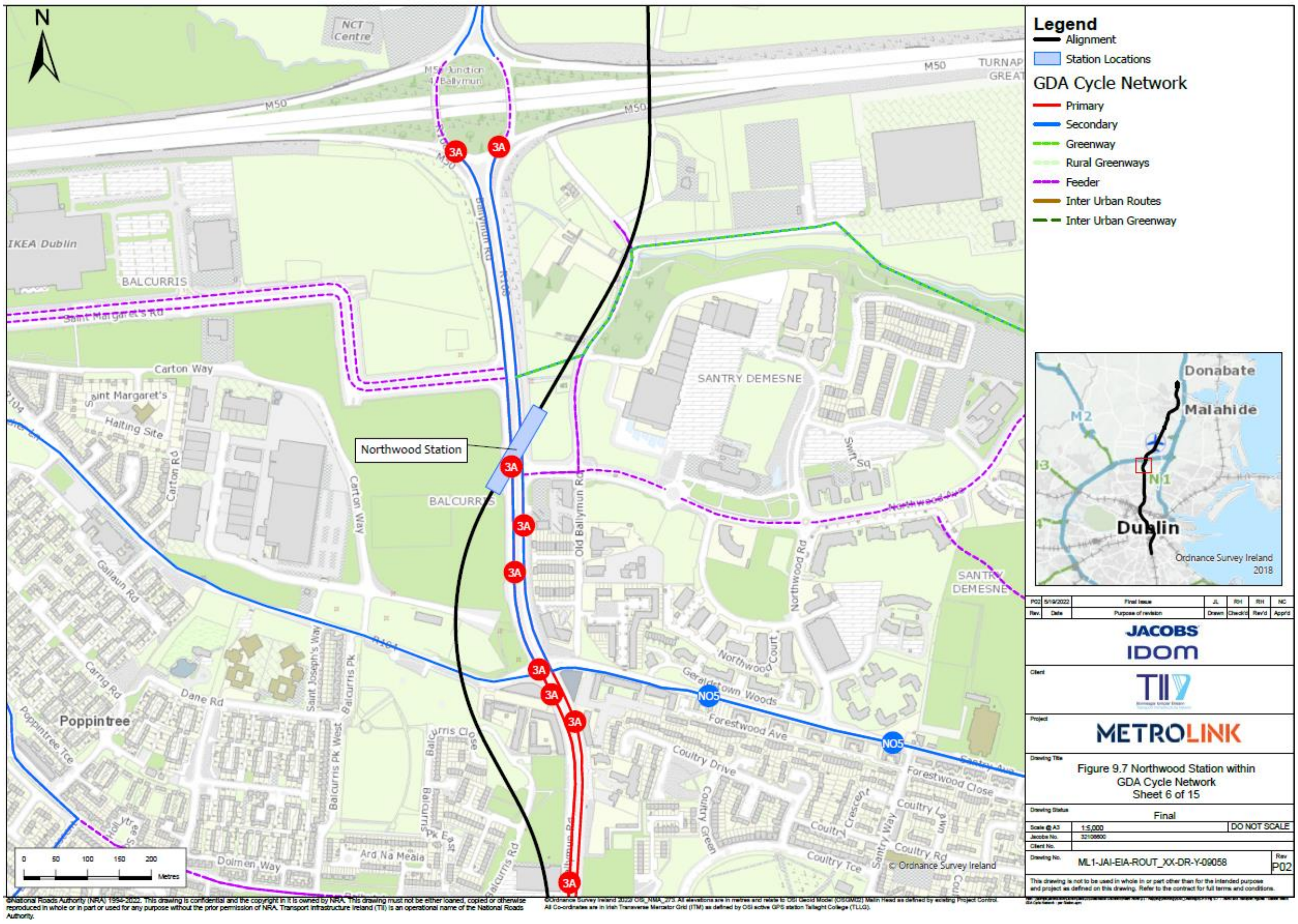


Figure 3.7: Proposed Station Location Within GDA Cycle Network

3.7.1 Baseline Accessibility Review

A baseline accessibility assessment has been undertaken to establish existing cycling provision relevant to the proposed Northwood Station. Catchment maps prepared for the accessibility analysis for cycling are based on two criteria, the average speed for each mode and the existing road network. Therefore, maps do not reflect existing access restrictions for private roads and motorised roads.

Figure 3.8 illustrates a 5min cycling and 10min cycling catchment from the Northwood Station, and the location of existing bike racks and Dublin Bike stations in close proximity to the station. As shown, there is no DCC cycle parking infrastructure within the catchment of the station.

Table 3.3 below lists local amenities within the cycle catchment of Northwood Station.

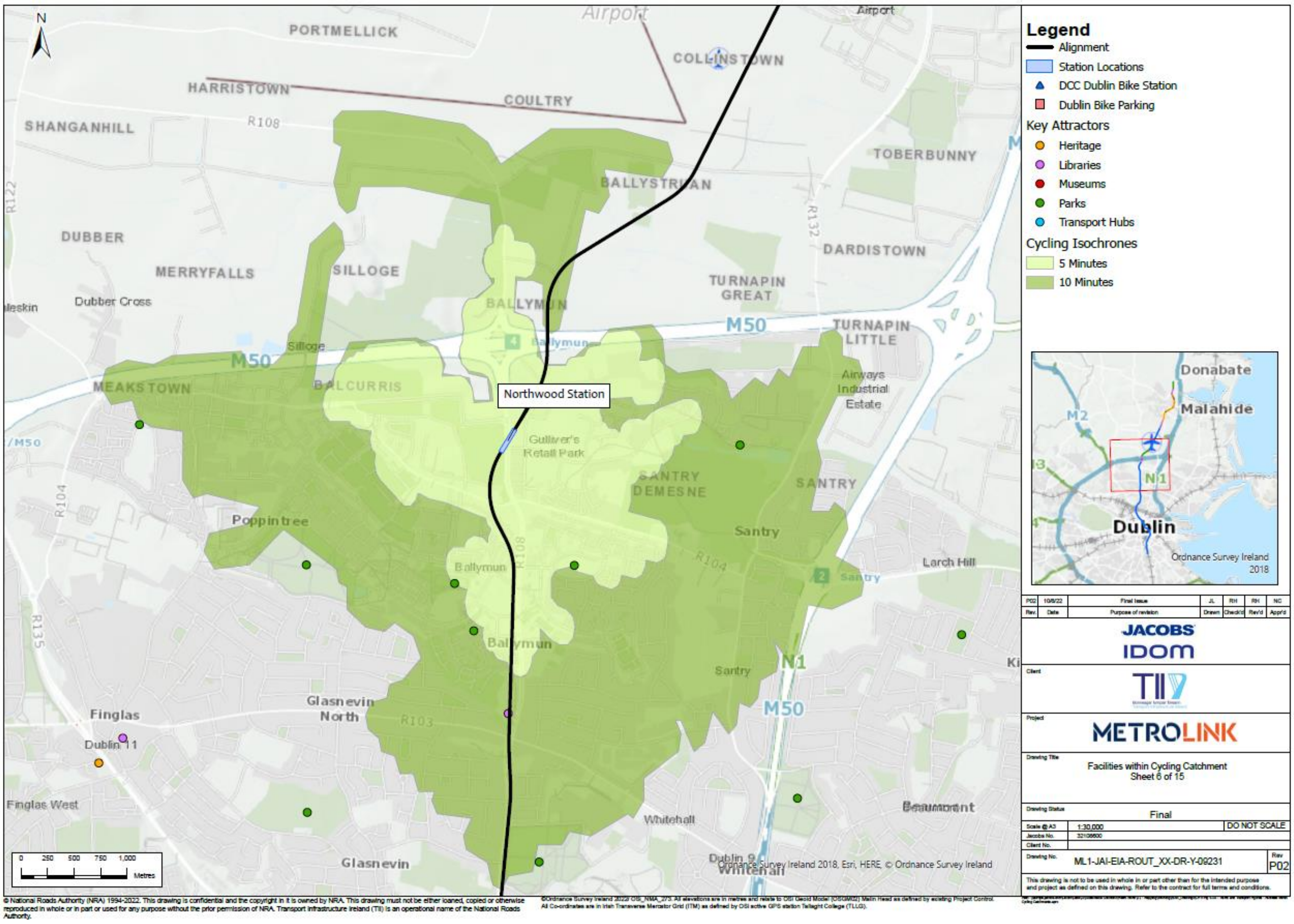


Figure 3.8: Northwood Station Cycling Catchment Area

Table 3.3 : Local facilities and amenities within cycling catchment area

Facilities within 5min cycling	Facilities within 10min cycling
IKEA at St. Margaret's Road	Holy Spirit Boys National Catholic School at Sillogue Road
Tesco Distribution Depot	Scoil an tSeachtar Laoch at Ballymun Road
Ballymun Industrial Estate at Carton Way	Ballymun Library at Ballymun Road
Decathlon Ireland (proposed retail shop) at St. Margaret's Road	CDETB Adult Education Service at Ballymun Road
Trinity College Sport Grounds	EuroSpar at Ballymun Road
Coultry Park at Coultry Road	Albert College Park at Ballymun Road
Ballymun East Community Centre at Woodhazel Close	Dublin City University (DCU) at R103
Ballymun Healthcare Facility at Ballymun Road	Omni Park Centre at Swords Road
DCU Summer School at Ballymun Road	Santry Park at Northwood Avenue
Old Ballymun Shopping Centre at Ballymun Road	Furry (Industrial Park) at Swords Road

3.8 Future Receiving Environment – Cycle Network

The BusConnects Core Bus Corridor proposals commence on the Ballymun Road at its junction with St. Margaret's Road, south of the M50 Junction 4. Between St. Margaret's Road and Shangan Road, a bus lane, two general traffic lanes and a segregated cycle track will be provided in each direction. Designated cycle lanes and crossings will also be provided at the R108/Northwood Avenue junction.

4. The Proposed Project – Northwood Station

4.1 Site Location and Development Context

The proposed Northwood Station will be located under the junction of the R108 Ballymun Road and Northwood Avenue, in front of the Gulliver's Retail Park. The proposed development is also bound to the west by St. Margaret's Road and will connect in the east to the Old Ballymun Road through a proposed new road access. Figure 4.1 below illustrates the location of the proposed development.

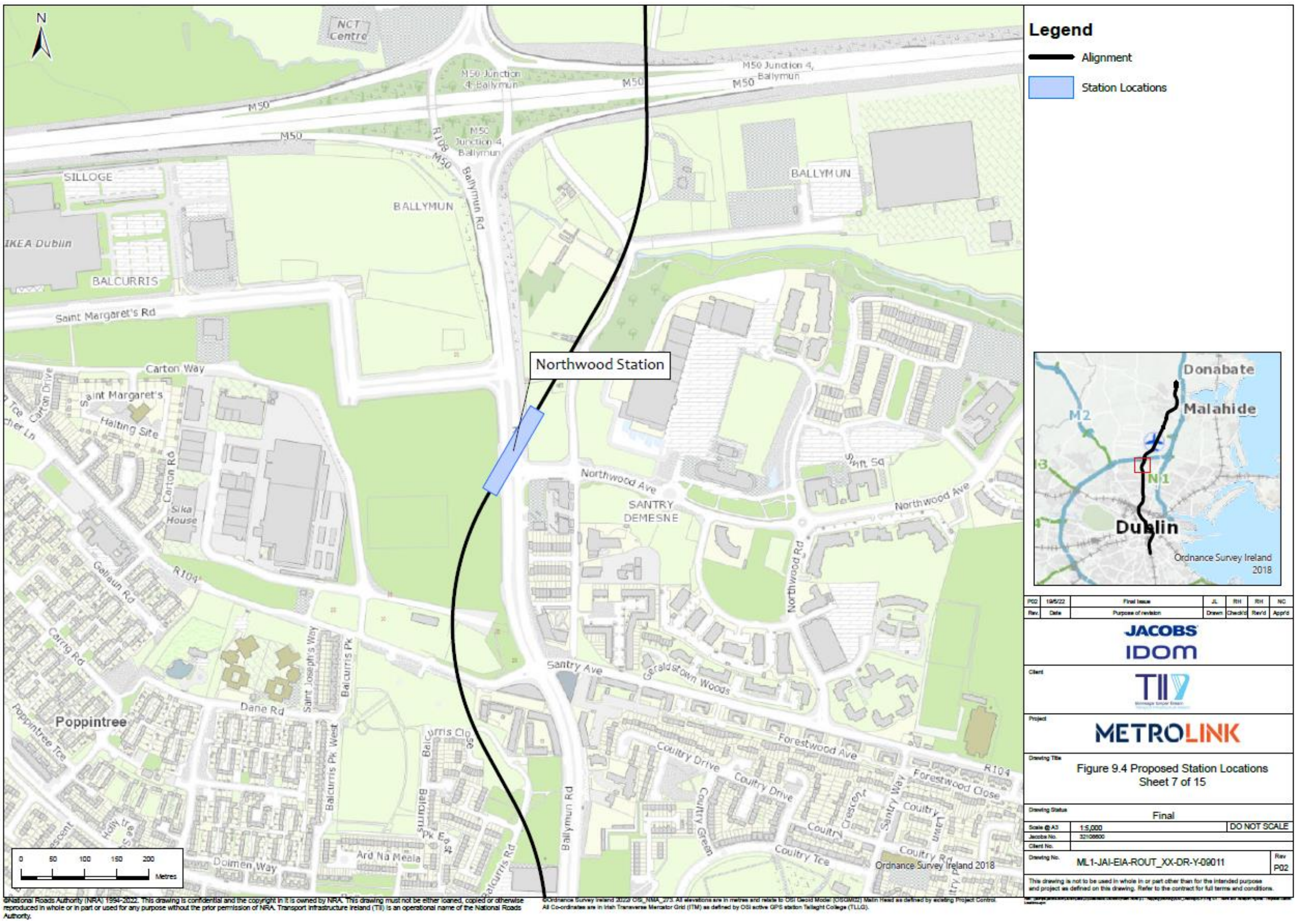


Figure 4.1: Proposed Site Location

Figure 4.2 shows the proposed passenger access/egress points to the proposed station. The station platforms can be accessed via the existing footway provisions on either side of the R108 Ballymun Road. The Bus Network Redesign proposals will provide for two bus stops in the vicinity of Northwood station, and designated bus lanes to facilitate interchange with the wider public transport network. 204 bicycle parking spaces will also be provided at Northwood Station. A pedestrian and cycle crossing will be provided to the north of the R108/Northwood Avenue junction.

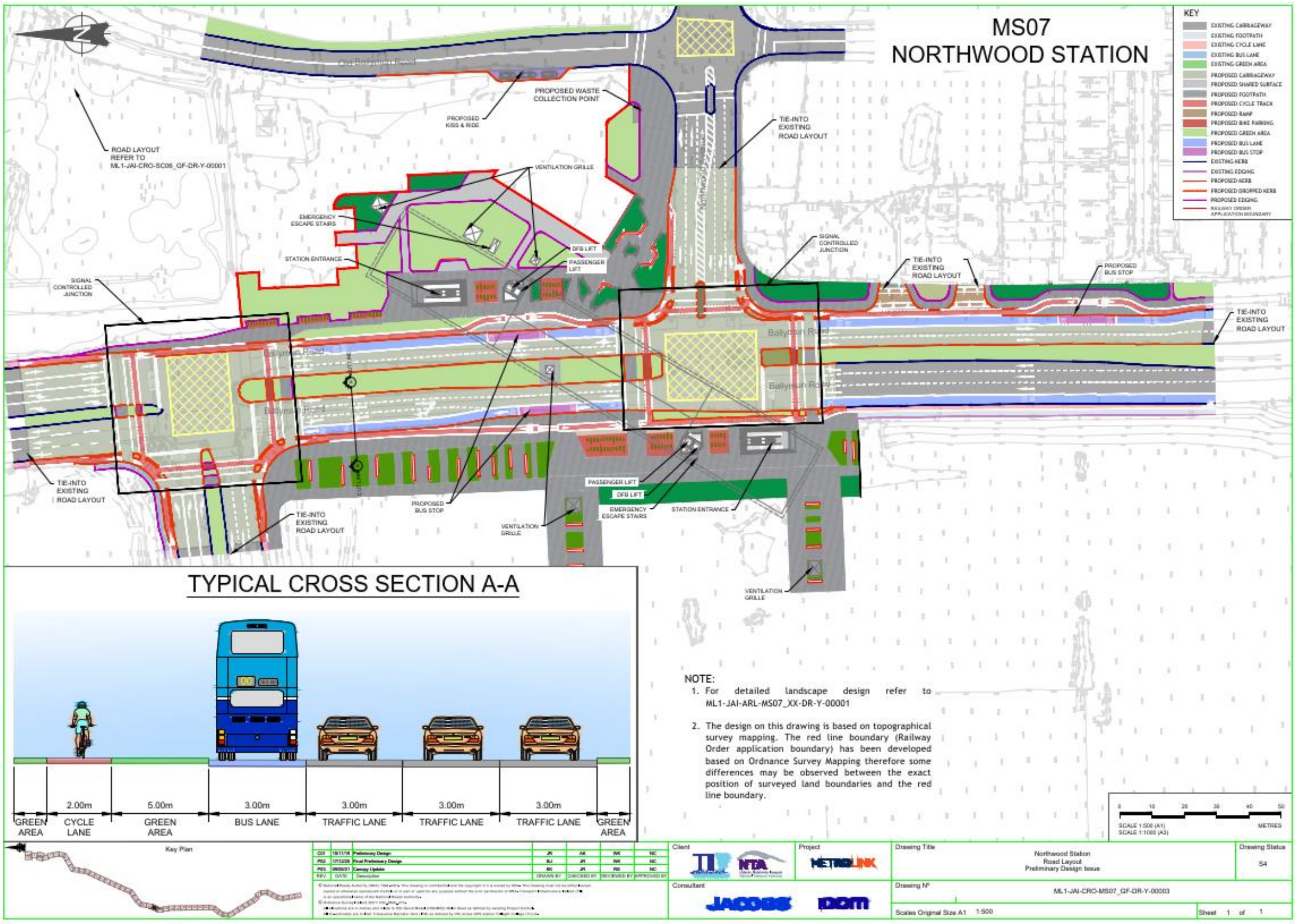


Figure 4.2: Northwood Station Layout Proposal

4.1.1 Dardistown Depot

To the north of Northwood Station, Dardistown Depot will house the facilities required for the maintenance and operation of the proposed Project and its rolling stock. It will be located near the future Dardistown station, however there will be no public passenger access to Dardistown station.

The future street level layout for Dardistown provides for two new priority junctions, including the existing junction off the R108, and the new depot main access off the Old Airport Road, to facilitate access to and from the depot for staff. As the station is not open for general public usage, the only traffic that will utilise the new junctions will be from the staff working at the depot. In total, it is estimated that there will be 100 staff members at the depot and the junctions have been designed to accommodate the associated traffic volumes and the likely vehicles that will service the depot.

Pedestrian access to the depot can be obtained from the R108, where the development can connect to the existing pedestrian network and can also access the bus stops on this section of the R108. It is noted, the current site layout is not showing this connection, but can be conditioned to provide it.

5. Trip Generation / Trip Attraction

5.1 Operational Phase

Traffic estimates associated with the Northwood Station operational phase have been established by utilising the National Transport Authority's (NTA) East Regional Model (ERM). The ERM provides a comprehensive representation of multi-modal travel patterns across the GDA and is a tool for the testing and appraisal of the Project.

The future street level layout provides for car parking spaces along both sides of the R108 to the east of the station, and additional taxi pick-ups. The existing road layout on the R108 will be reduced to one lane in both directions for vehicular traffic as part of the BusConnects Core Bus Corridor proposals, to accommodate a designated bus lane and cycling infrastructure in the vicinity of the station.

5.1.1 Passenger Boarding and Alighting

Passenger demand modelling has been used to predict the numbers of passengers boarding and alighting at each station, and the resulting passenger load on MetroLink vehicles, for the years 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). The scenarios considered for assessment for each of the years 2035, 2050 and 2065 are outlines in Table 5.1.

Table 5.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project
Do Minimum Scenario	Committed transport schemes in the absence of the Project
Do Something - Scenario A	Scenario with the Project and committed transport schemes only.
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for Opening year (2035) and planned schemes under the Transport Strategy for the GDA for the Design Year (2050) and the Forecast Year (2065)

5.1.1.1 Boarding and Alighting Volumes

Table 5.2 to Table 5.9 show boarding, alighting and public transport interchange numbers for the Northwood Station during the peak hours. All data has been retrieved from the ERM developed by the NTA. Data in this section is reported for the busiest hour within each of the following peak periods:

- AM: busiest hour between 07:00 – 10:00;
- LT (lunch time): busiest hour between 10:00 – 13:00;
- SR (school run): busiest hour between 13:00 – 16:00;
- PM: busiest hour between 16:00 – 19:00.

Figure 5.1 presents the volume of boarding and alighting passengers at Northwood Station over the 12hr peak period (07:00-19:00) in both Scenario A and Scenario B. Scenario A has the highest volume of both boarding and alighting passengers, reaching approximately 4,800 boarding passengers and 4,000 alighting passengers in 2065. Comparatively, Scenario B 2065 reaches 4,100 boarding passengers and over 3,700 alighting passengers.

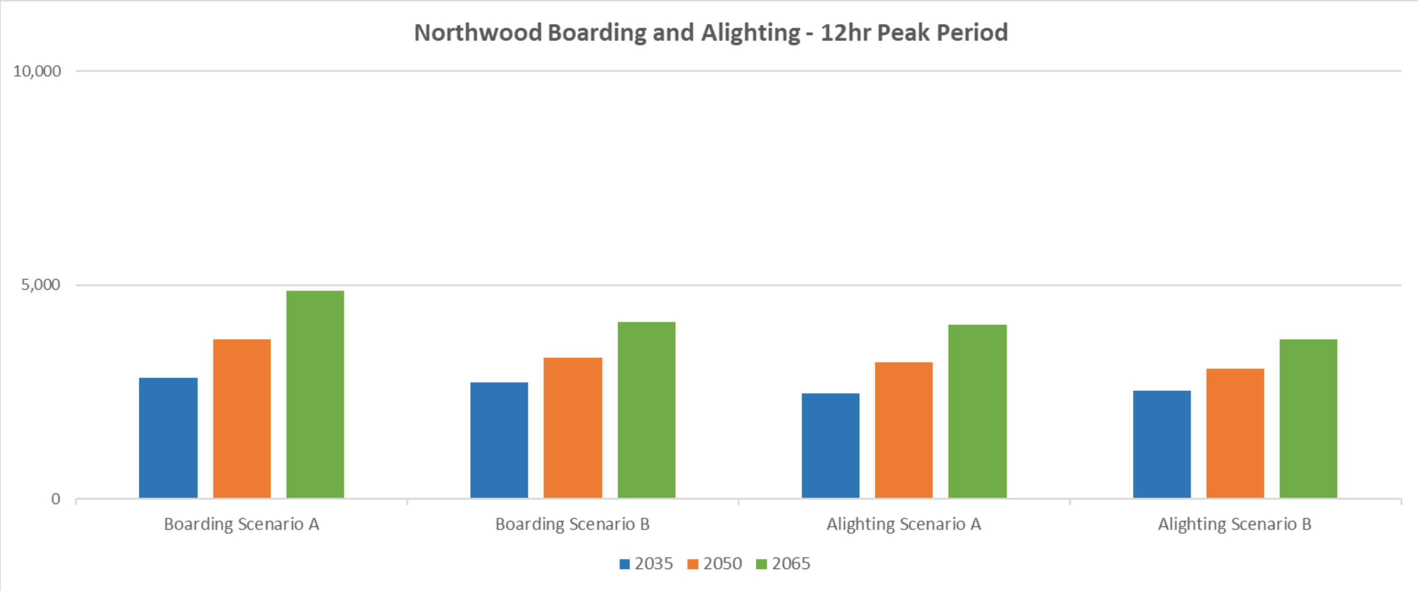


Figure 5.1: Northwood 12hr Boarding and Alighting in Scenario A and Scenario B

5.1.1.2 Boarding and Alighting Volumes: Scenario A

Table 5.2 to Table 5.4 present the boarding and alighting passenger numbers for Northwood Station in Scenario A.

During the Opening Year 2035. Estimations indicate that the morning peak and afternoon peak will experience the highest number of boarding passengers with the southbound as the busiest direction. In this direction, approximately 500 passengers will board the MetroLink vehicles at the Northwood Station during the AM peak hour and approximately 100 passengers will board during the PM peak hour. The highest number of passengers alighting at the Northwood Station will be approximately 300 during the PM peak hour in the northbound direction.

Table 5.2: Boarding and Alighting Numbers at Northwood Station in 2035, Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	110	209	4,347	40	88	2,948	31	123	3,499	70	324	5,593
Southbound	578	86	7,822	119	40	3,465	84	49	3,629	161	79	3,877

Source: East Regional Model (ERM)

For the year 2050, during the AM peak hour, approximately 700 passengers are expected to board the MetroLink vehicles and head south, while approximately 200 northbound passengers are expected to alight. During the PM peak hour, almost 200 passengers are expected to board the MetroLink vehicles southbound, with 400 northbound passengers alighting.

Table 5.3: Boarding and Alighting Numbers at Northwood Station in 2050, Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	162	231	5,795	62	109	4,302	44	157	4,464	94	415	7,022
Southbound	734	110	9,290	162	64	5,304	108	78	4,922	195	116	5,118

Source: East Regional Model (ERM)

For the year 2065, during the AM peak hour, approximately 900 passengers are expected to board the MetroLink vehicles southbound and 200 northbound passengers are expected to alight. During the PM peak hour, approximately 200 passengers are expected to board southbound, while 500 northbound passengers will alight.

Table 5.4: Boarding and Alighting Numbers at Northwood Station in 2065, Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	229	270	7,322	86	137	5,278	76	207	6,155	126	524	8,720
Southbound	933	139	10,968	208	83	6,059	138	104	6,186	241	162	6,601

Source: East Regional Model (ERM)

5.1.1.3 Boarding and Alighting Volumes: Scenario B

Table 5.5 to Table 5.7 below highlight the boarding and alighting passenger numbers for Northwood Station in Scenario B.

For the year 2035, during the AM peak hour, approximately 500 passengers will board the MetroLink vehicles and southbound, with 200 northbound passengers alighting. During the PM peak hour, 100 southbound passengers are expected to board while 300 northbound passengers will alight.

Table 5.5: Boarding and Alighting Numbers at Northwood Station in 2035, Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	106	223	4,389	39	87	3,045	30	126	3,675	69	337	5,133
Southbound	545	82	7,600	105	44	3,835	82	51	3,814	171	68	3,701

Source: East Regional Model (ERM)

Table 5.6 shows boarding and alighting passenger numbers in the 2050 year. During the AM peak hour, it is expected approximately 500 passengers will board southbound while 100 passengers will board and head north. 200 northbound passengers and 100 southbound passengers are predicted to alight at Northwood Station during the AM peak hour. During the PM peak hour, almost 200 passengers will board the MetroLink vehicles at Northwood Station southbound while 300 northbound passengers will alight.

Table 5.6: Boarding and Alighting Numbers at Northwood Station in 2050, Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	153	233	6,149	75	104	4,853	53	145	4,810	103	368	6,956
Southbound	556	121	9,295	138	70	5,458	102	78	5,147	193	103	5,575

Source: East Regional Model (ERM)

For the year 2065, during the AM peak hour, approximately 700 passengers will board the MetroLink vehicles southbound, with 200 northbound passengers alighting. During the PM peak hour, 200 southbound passengers are expected to board while 400 northbound passengers will alight.

Table 5.7: Boarding and Alighting Numbers at Northwood Station in 2065, Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	208	254	7,244	86	125	5,630	80	179	6,309	135	453	7,577
Southbound	687	156	11,766	171	88	6,462	127	100	6,227	223	135	6,070

Source: East Regional Model (ERM)

5.1.1.4 Public Transport Interchange Volumes

Table 5.8 and Table 5.9 present the volume of passengers transferring to and from other public transport modes in Scenario A and Scenario B respectively. The majority of the passengers will originate from or have final destinations at the surrounding zones, with limited numbers interchanging with the bus network. Northwood Station is served by several bus services with less than 15min frequencies. The station is located along E spine which offers frequencies between 8 to 20 minutes, as shown in section 3.2.

Table 5.8: Transfers To/From other Public Transport modes in Scenario A

Scenario A									
Year	Peak	Boarding				Alighting			
		First Boarding	From Bus	From Rail/DART	From Luas	Final Stop	To Bus	To Rail/DART	To Luas
2035	AM	663	26	-	-	278	16	-	-
	PM	224	7	-	-	386	17	-	-
2050	AM	862	34	-	-	320	21	-	-
	PM	279	10	-	-	508	23	-	-
2065	AM	1,119	43	-	-	383	26	-	-
	PM	354	13	-	-	655	30	-	-

Source: East Regional Model (ERM)

Table 5.9: Transfers To/From other Public Transport modes in Scenario B

Scenario B									
Year	Peak	Boarding				Alighting			
		First Boarding	From Bus	From Rail/DART	From Luas	Final Stop	To Bus	To Rail/DART	To Luas
2035	AM	626	24	-	-	285	20	-	-
	PM	233	7	-	-	388	18	-	-
2050	AM	683	27	-	-	329	25	-	-
	PM	286	10	-	-	447	23	-	-
2065	AM	862	33	-	-	385	25	-	-
	PM	346	12	-	-	559	30	-	-

Source: East Regional Model (ERM)

5.1.1.5 Distribution of Boarding and Alighting Passengers

Figure 5.2 shows the origins of passengers arriving to board at the station, and Figure 5.3 shows the destination of passengers alighting at Northwood Station during the AM peak hour (figures present Scenario A only as a visual example, spatial distributions will be similar across Scenario A and Scenario B). The width of the lines is proportional to the number of commuters leaving/arriving at the station.

The main origins of passengers in the AM peak are the residential lands immediately surrounding the station. The modelling indicates that passengers will come from walking distances of beyond 20 mins to the west of the station and span as far as the Hampton Wood area. Passenger demand to the east will include existing residential areas such as Gulliver's Retail Park and towards Furry Park Industrial Estate. Finally, the most significant proportion of passenger demand will originate from the south-east, from the residential area of Coultry.

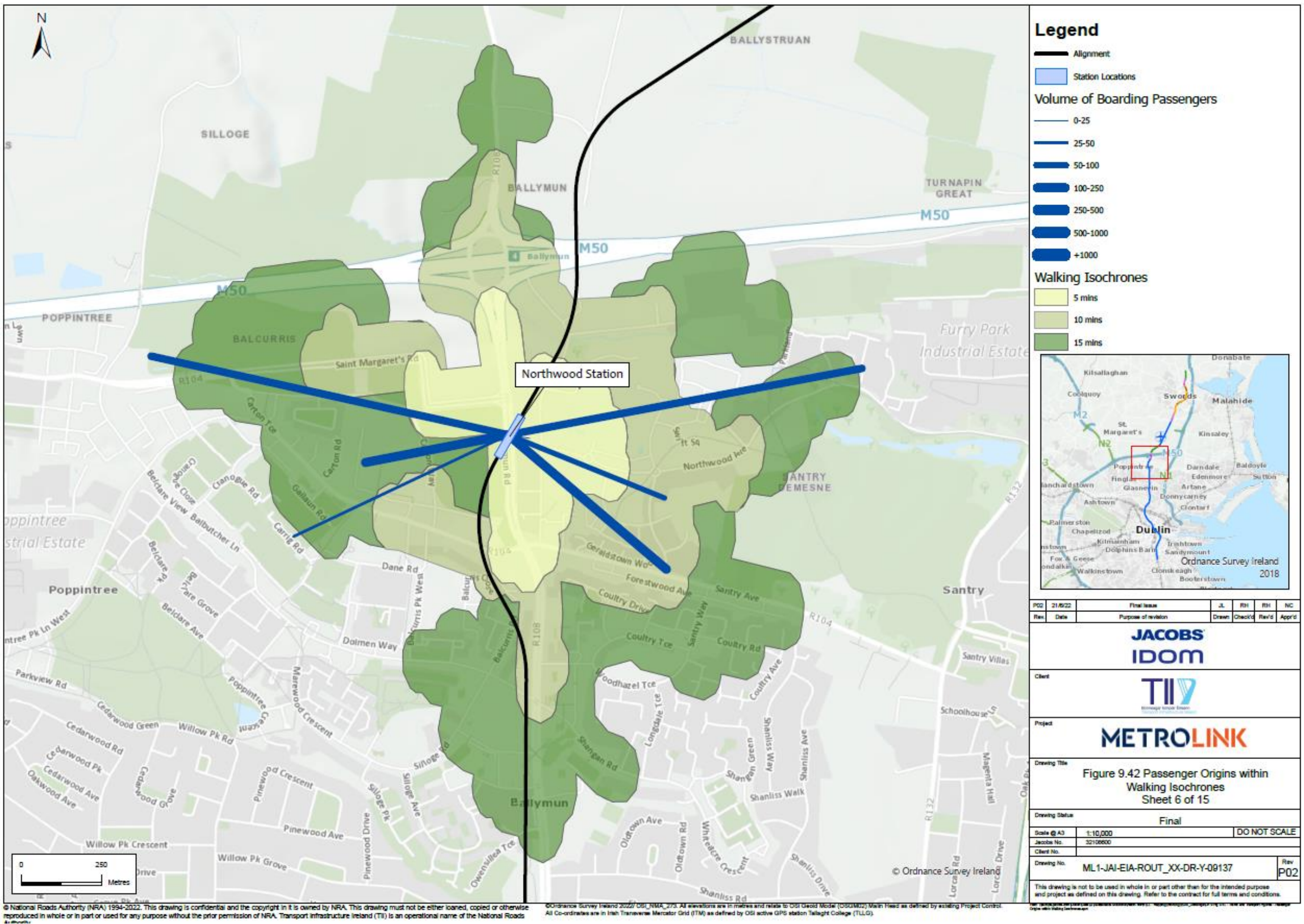


Figure 5.2: Passenger Origins During AM peak hour and Walking Catchment Areas

The destinations for disembarking passengers in the AM peak hour are predominately to the Northwood Business Campus and surrounding business developments located to the east of the station at Northwood Avenue, and the business developments located to the west of the R108 Ballymun Road near Balcurris.

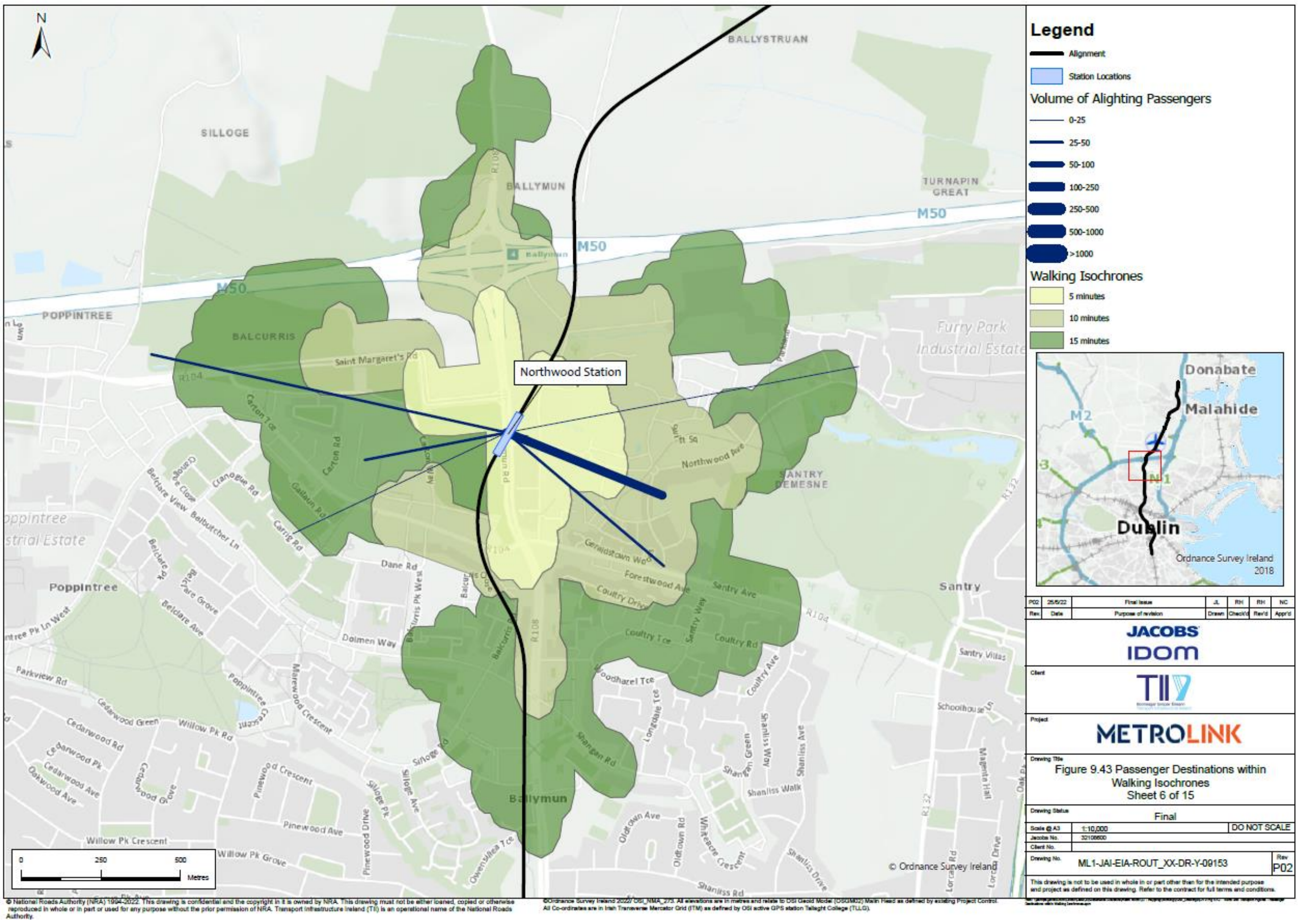


Figure 5.3: Passenger Destinations During AM peak hour and Walking Catchment Areas

6. Assessment of Impacts

6.1 Operational Phase

As part of the assessment of impacts associated with the Operational Phase of the Project, the impact of the proposed Northwood Station on all modes of transport has been examined – public transport (PT), vehicular traffic, walking and cycling.

6.1.1 Public Transport Assessment

The ERM model has been interrogated in order to estimate the reduction in private car travel associated with origin and destination trips in the zones around Northwood Station. In Scenario A, there is a 20% increase in trip demand between 2035 and 2050, increasing from 66,266 trips in 2035 to 79,470 trips in 2050. There is a 15% increase in trip demand between 2050 and 2065, reaching a demand of 91,127 trips in 2065. Between the Do Minimum and Do Something scenarios, there is a 5 percentage point increase in PT mode share in 2035, from 27% in the Do Minimum scenario to 32% in the Do Something scenario. In both 2050 and 2065, there is an increase of 6 percentage points in PT mode share, increasing from 30% in the 2050 Do Minimum scenario, to 36% in the 2050 Do Something scenario, and from 33% in the 2065 Do Minimum scenario, to 39% in the Do Something.

Car mode share decreases by 3 percentage points in 2035, from 49% in the Do Minimum to 46% in the Do Something. In 2050, Car mode share decreases by 3 percentage points between the Do Minimum and Do Something scenarios, from 45% to 42%. In 2065, Car mode share decreases by 3 percentage points, from 41% in the Do Minimum scenario to 38% in the Do Something scenario.

Active Modes mode share (which includes Walking and Cycling) reduces by 2-3 percentage points in all years. Whilst end-to-end Active Modes trips will reduce, there will be an increase in Active Modes trips to and from the station where passengers will interchange with the Project. Overall, there is a shift towards sustainable modes (Active Modes and PT combined), and a reduction in Car trip demand at Northwood.

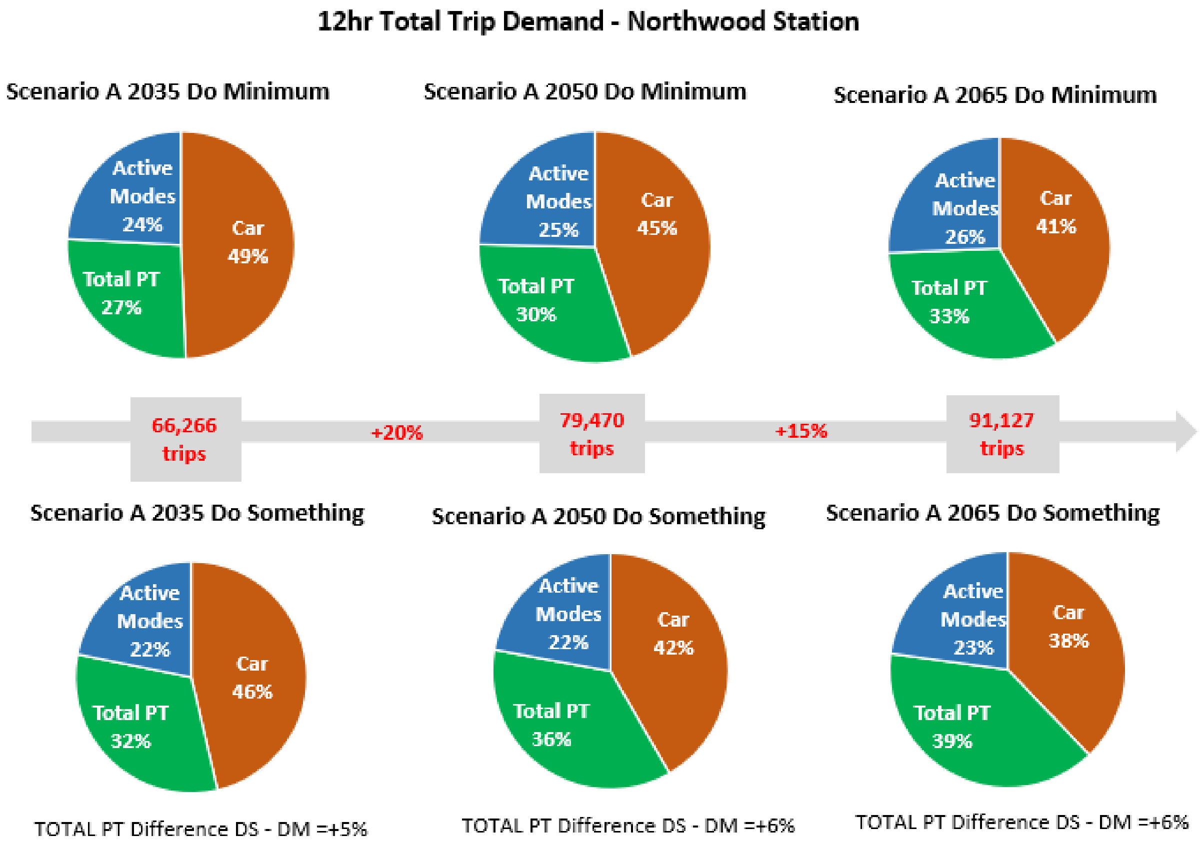


Figure 6.1: Northwood Mode Share – Scenario A

In Scenario B, there is a 19% increase in trip demand between 2035 and 2050, increasing from 66,366 trips in 2035 to 79,087 trips in 2050. There is a 15% increase in trip demand between 2050 and 2065, reaching a demand of 90,921 trips in 2065. Between the Do Minimum and Do Something scenarios, there is a 4 percentage point increase in PT mode share in 2035, from 28% in the Do Minimum scenario to 32% in the Do Something scenario. In both 2050 and 2065, there is an increase of 5 percentage points in PT mode share, increasing from 33% in the 2050 Do Minimum scenario, to 38% in the 2050 Do Something scenario, and from 35% in the 2065 Do Minimum scenario, to 40% in the Do Something.

Car mode share decreases by 2 percentage points in 2035, from 48% in the Do Minimum to 46% in the Do Something. In 2050, Car mode share decreases by 3 percentage points between the Do Minimum and Do Something scenarios, from 43% to 40%. In 2065, Car mode share decreases by 3 percentage points, from 40% in the Do Minimum scenario to 37% in the Do Something scenario.

Active Modes mode share (which includes Walking and Cycling) reduces by 2 percentage points in all years. Whilst end-to-end Active Modes trips will reduce, there will be an increase in Active Modes trips to and from the station where passengers will interchange with the Project. Overall, there is a shift towards sustainable modes (Active Modes and PT combined), and a reduction in Car trip demand at Northwood.

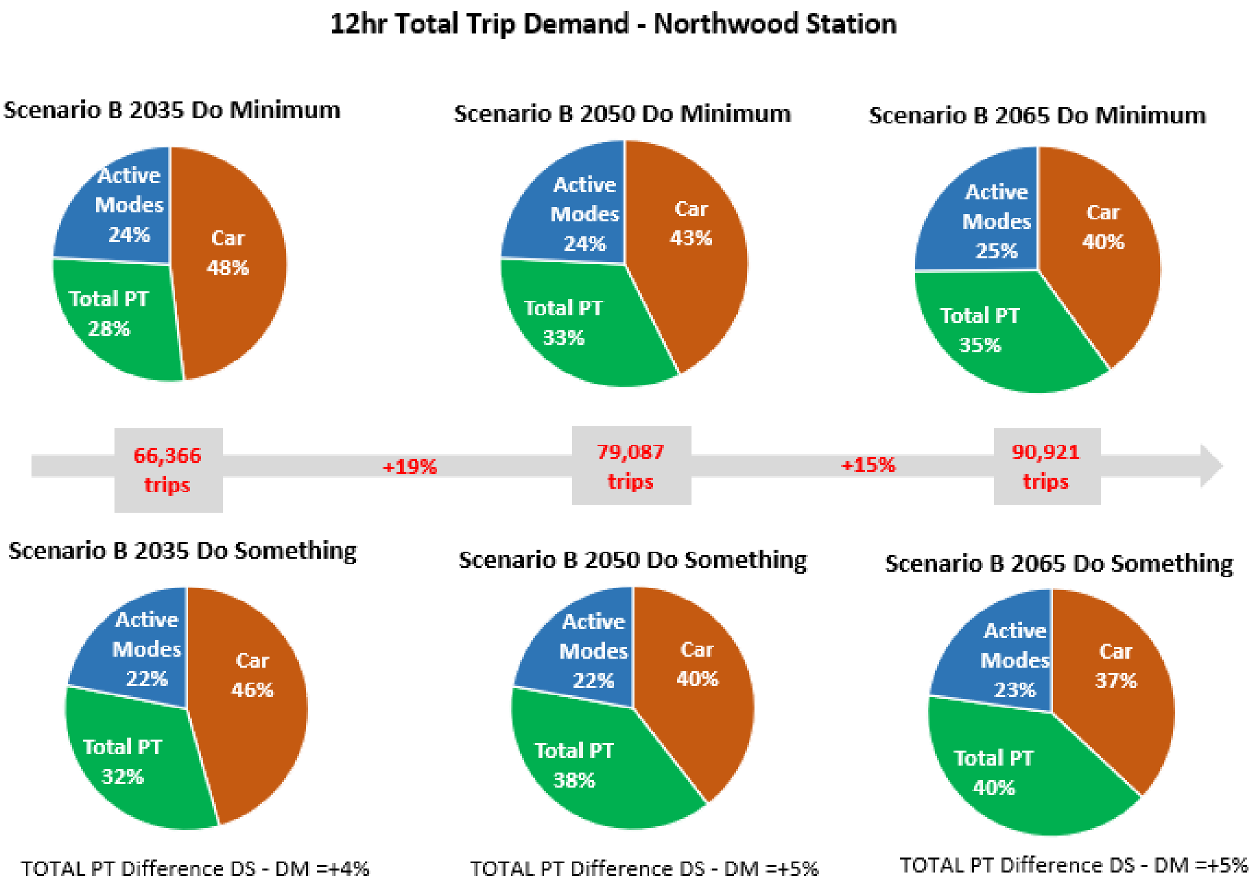


Figure 6.2: Northwood Mode Share- Scenario B

The future street level layout at Northwood Station includes a bus lane on both the northbound and southbound sides of the R108 within the Project Boundary. A bus stop is located on the northbound side of the R108 Ballymun Road, north of the station entrance. A pedestrian crossing is provided to the north and south of the entrance, to facilitate interchange between the bus network and the second station access on the southbound side of the R108. As part of the Bus Network Redesign proposals, Northwood station will be served by E Spine routes to Dublin City Centre. North of the proposed station and St. Margaret's Road will also be served by Other City Round 19.

Figure 6.3 presents the changes in public transport mode share (including the Project) in Scenario A 2065 AM peak hour, with Figure 6.4 presenting the same for Scenario B 2065 AM peak hour. In the 2035 AM peak hour, the zones surrounding Northwood station see an increase in PT usage (including the Project) of up to 10 percentage points. In the 2065 scenario, these increases extend further along the M50 boundary north of the station, with an increased number of zones to the west of the station seeing increases in PT (including MetroLink) mode share of up to 10 percentage points. In Scenario B 2035, the zones around Northwood Station see an increase in PT mode share of up to 5 percentage points, however this increases to a 10 percentage point increase in both 2050 and 2065 in the zone containing Gulliver's Retail Park (east of station).

In the PM peak hour, the zones around Northwood Station see an increase in PT mode share of up to 10 percentage points in Scenario A 2035 and 2065, however this reduces to an increase of up to 5 percentage points in 2050. In Scenario B 2035, the zones around Northwood Station see an increase of up to 5 percentage points in PT mode share, however this increases to up to a 10 percentage point increase from the Do Minimum scenario in both 2050 and 2065.

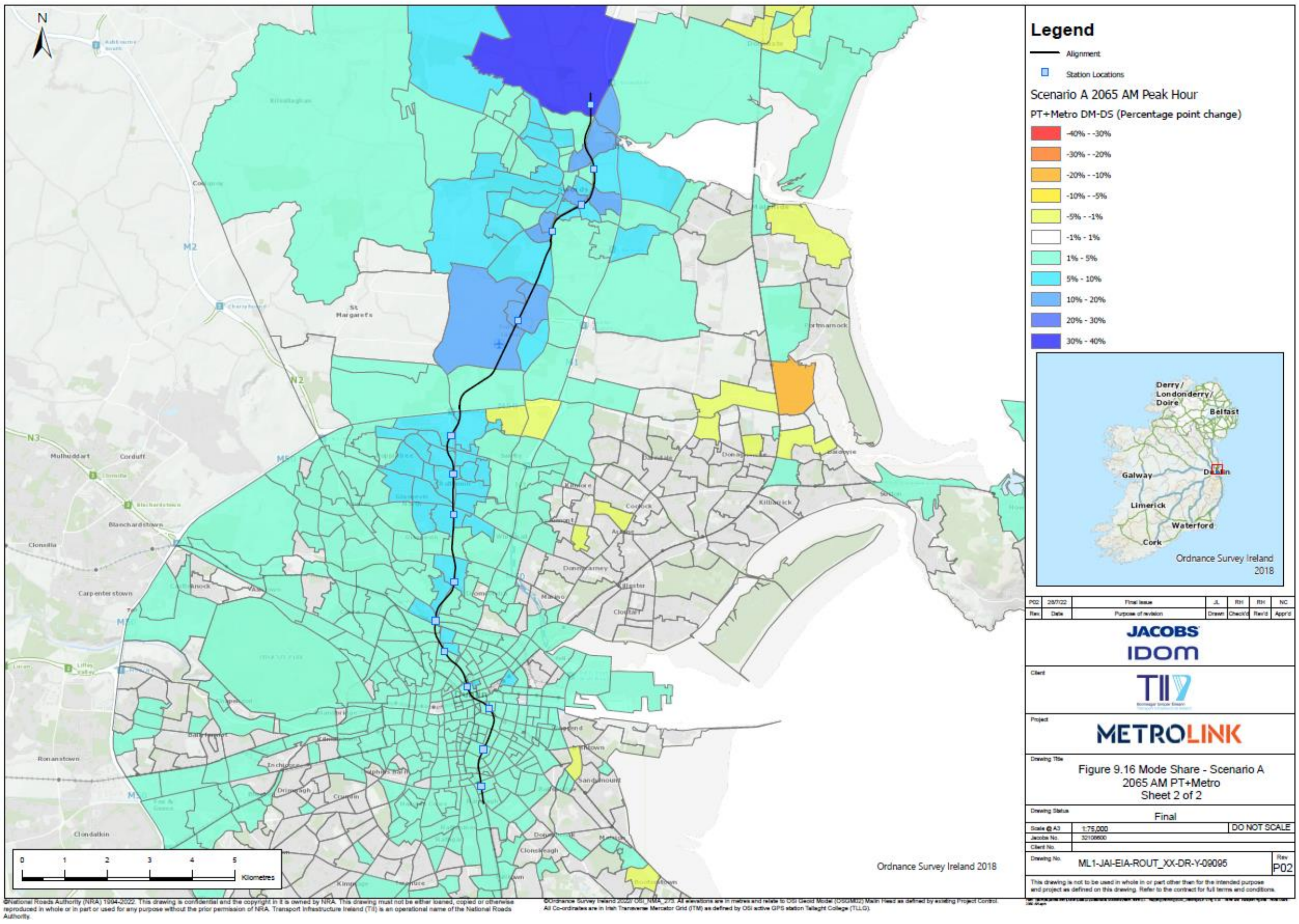


Figure 6.3: Changes in PT (Including the Project) Mode Share Scenario A 2065 AM Peak Hour

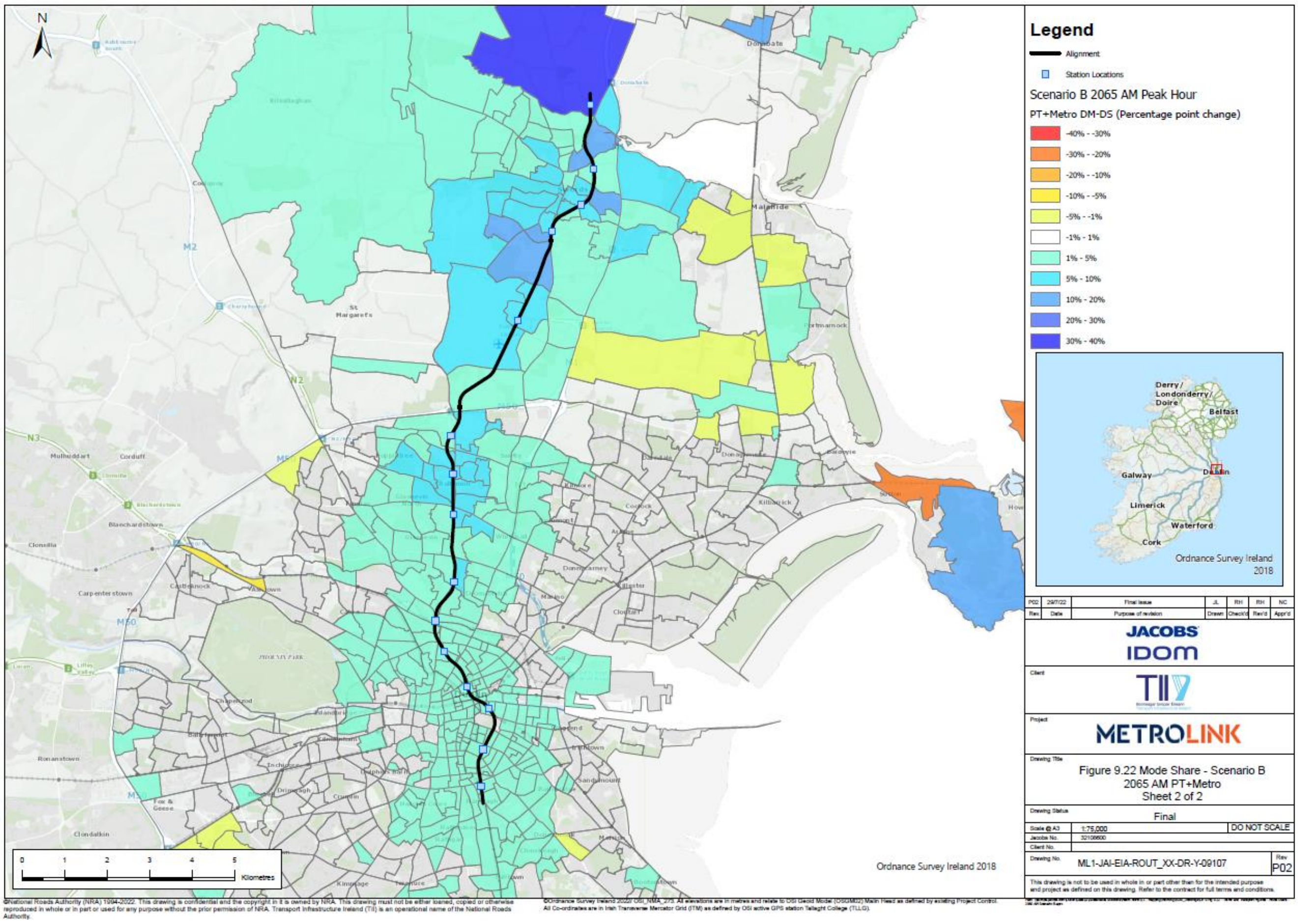


Figure 6.4: Changes in PT (Including the Project) Mode Share Scenario B 2065 AM Peak Hour

End-to-end public-transport-only journey time comparisons between Do Minimum and Do Something scenarios, including interchange between the Project vehicles and other public transport modes, have been undertaken to investigate benefits to journey time with the proposed Project in place in both Scenario A and Scenario B. The assessments were carried out for zones located across the city as illustrated in Figure 6.5 and Table 6.1. These zones have been identified using local knowledge of population settlements and trip attractors.

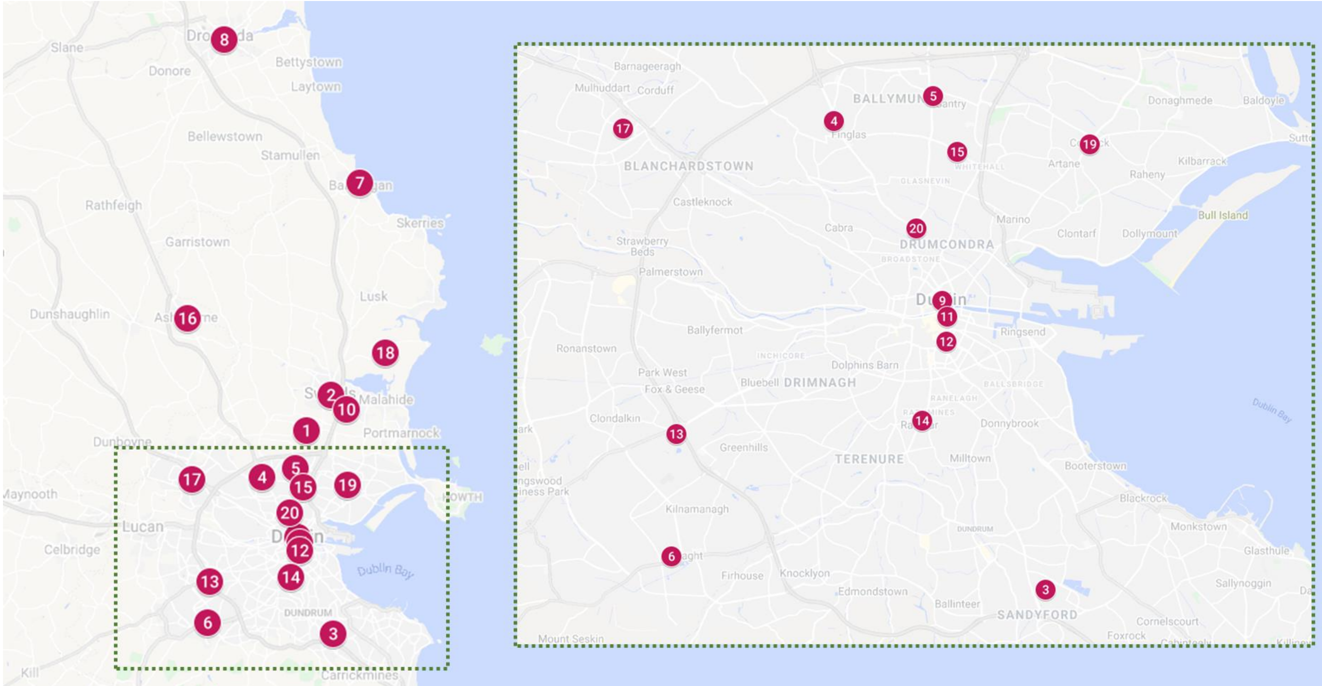


Figure 6.5: Zones assessed for public transport journey time

Table 6.1: Zones assessed for public transport journey time

Nb	Location	Nb	Location	Nb	Location	Nb	Location
1	Dublin Airport	**6**	Tallaght	**11**	College Street	**16**	Ashbourne
2	Swords Pavilion	**7**	Balbriggan	**12**	St. Stephen's Green	**17**	Blanchardstown
3	Sandyford	**8**	Drogheda	**13**	Red Cow	**18**	Donabate
4	Finglas	**9**	O'Connell Street	**14**	Rathgar	**19**	Coolock
5	Ballymun	**10**	Sword East	**15**	DCU	**20**	Glasnevin

Northwood Station is located within the Ballymun zone/ area.

In Scenario A the following changes to journey times are observed:

- In the 2035, 2050 and 2065 AM period, public transport journeys from Ballymun area to locations such as Rathgar Road area, Sandyford area, and Swords Pavilion area will see time savings of approximately 20 minutes when the proposed Project is in place.
- Public transport journeys from Ballymun area to key Dublin City Centre locations such as O'Connell Street, St. Stephen's Green and Trinity College will see savings of between 10 and 17 minutes in the 2035, 2050 and 2065 AM period.
- Public transport journeys from Ballymun to areas in north Dublin, such as Swords East, will see savings of approximately 19 minutes in the 2035, 2050 and 2065 AM period; and to Dublin Airport, savings of approximately 12 minutes in the 2035, 2050 and 2065 AM period.

In Scenario B the following changes to journey times are observed:

- In the 2035, 2050 and 2065 AM period, public transport journeys from Ballymun area to locations such as Sandyford area, Swords Pavilion area, and Swords East area see time savings of approximately 17 minutes when the proposed Project is in place.
- Public transport journeys from Ballymun to key Dublin City Centre locations such as O'Connell Street, St. Stephen's Green and Trinity College also see savings of between 7 and 14 minutes 2035, 2050 and 2065 AM period.
- Public transport journeys from Ballymun to areas in north Dublin, such as Balbriggan see savings of approximately 17 minutes in the 2035 AM period, increasing to a saving of approximately 19 minutes in the 2065 AM period; and to Dublin Airport, savings of approximately 10 minutes in the 2035, 2050 and 2065 AM period.

6.1.2 Traffic Impact Assessment

There will be two lanes of traffic both northbound and southbound on the R108, however two pedestrian crossings will be provided at the R108/Northwood Avenue signalized junction.

Results from the ERM model show reductions in private car travel from the surrounding area during the operational phase.

Figure 6.6 presents the changes in Car mode share in Scenario A 2065 AM peak hour, with Figure 6.7 presenting the same for Scenario B 2065 AM peak hour. In both Scenario A and Scenario B, in all forecast years, the zones around Northwood Station see a reduction in Car mode share of up to 5 percentage points. In the PM peak hour in both scenarios, Car mode share reduces by less than 1% in 2035, however there are reductions of up to 5 percentage points in both 2050 and 2065.

Over the 12hr period, the zones within a 2km radius of Northwood Station see a reduction of over 1,900 car trips between the Scenario A 2035 Do Minimum and Do Something scenarios, reaching a reduction of over 2,500 trips in Scenario A 2050. In 2065, there is a reduction of 3,200 car trips between the Do Minimum and Do Something scenarios. In Scenario B, these zones see a reduction of over 1,600 car trips between the 2035 Do Minimum and Do Something scenarios, increasing to a reduction of 2,500 car trips in 2050. 2065 sees a reduction of 2,700 car trips between the Do Minimum and Do Something scenarios.

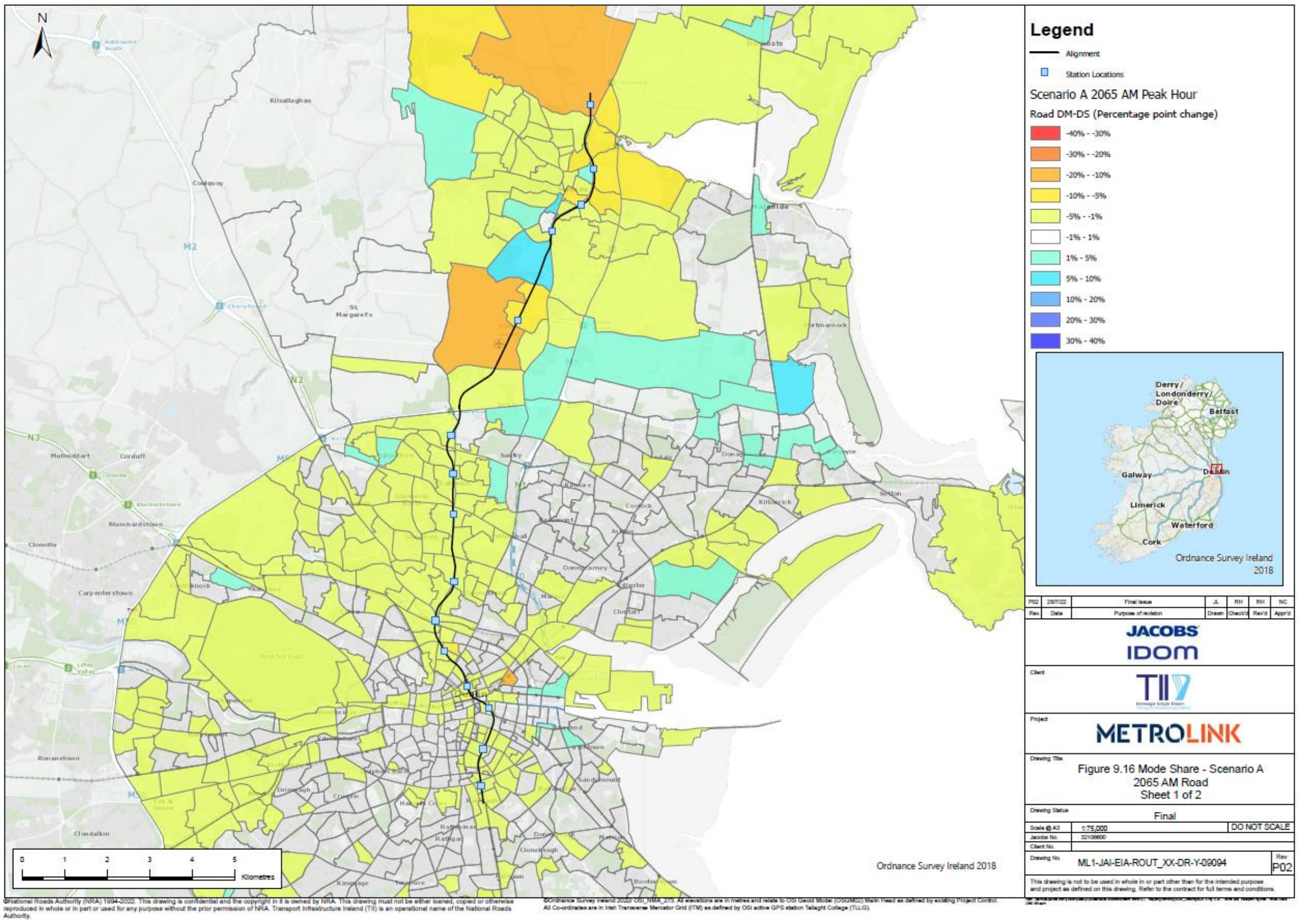


Figure 6.6: Changes in Car Mode share in Scenario A 2065 AM Peak hour

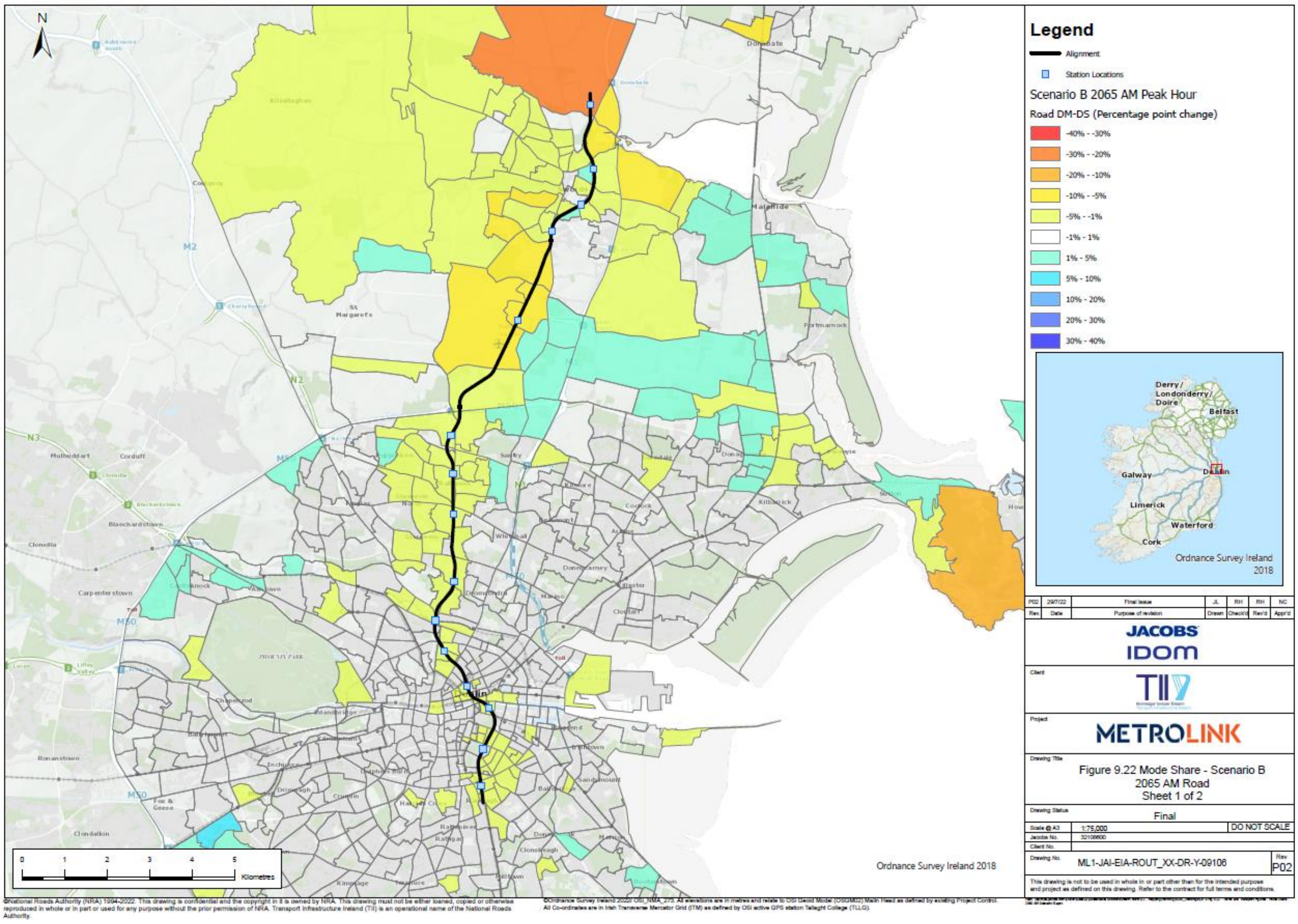


Figure 6.7: Changes in Car Mode share in Scenario B 2065 AM Peak hour

6.1.3 Pedestrian Impact Assessment

The proposed street level layout provides for footways along both sides of the R108 Ballymun Road during the operational phase of the Project. Pedestrian crossing facilities will be provided both north and south of the station entrance to ensure safe access to the station from Northwood Avenue.

6.1.3.1 Pedestrian Footway Comfort Assessment

An assessment of the pedestrian provision around the station has been undertaken, in order to confirm its robustness in catering for the additional demand associated with the proposed project. The assessment comprises of a ‘Footway Comfort Assessment’, which predicts the pedestrian comfort levels based on industry guidance, taking cognisance of factors including pedestrian demand and footway width. Furthermore, an additional assessment has been undertaken in order to determine the adequacy of pedestrian crossing provisions in catering for predicted station demand.

It has been assumed that all of the Project pedestrian movements are ‘new’ onto the network, i.e. that they are not currently occurring along this section of the footway network.

The Scenario A 2050 design year was assessed, with Scenario A 2065 also assessed as the ‘worst-case scenario’ for passenger numbers, as this scenario has the highest volume of total AM passenger demand in the future year between both Scenario A and Scenario B (almost 61,000 AM boarding passengers across the alignment in Scenario A, compared to almost 55,000 AM boarding passengers in Scenario B). At all stations, the passenger demand in the AM peak hour is lower in Scenario B than in Scenario A, with the exception of Fosterstown Station where there is a 12% increase in Scenario B. As such, Scenario B has not been assessed, with the exception of Fosterstown Station to ensure that all possible significant impacts are accounted for.

The pedestrian comfort assessment shows that all footway provisions assessed around Northwood Station during the 2050 AM peak, comply with DCC guidance and have 'Comfortable' Pedestrian Comfort Levels. There is no change between 2050 and 2065, as shown in Figure 6.9.

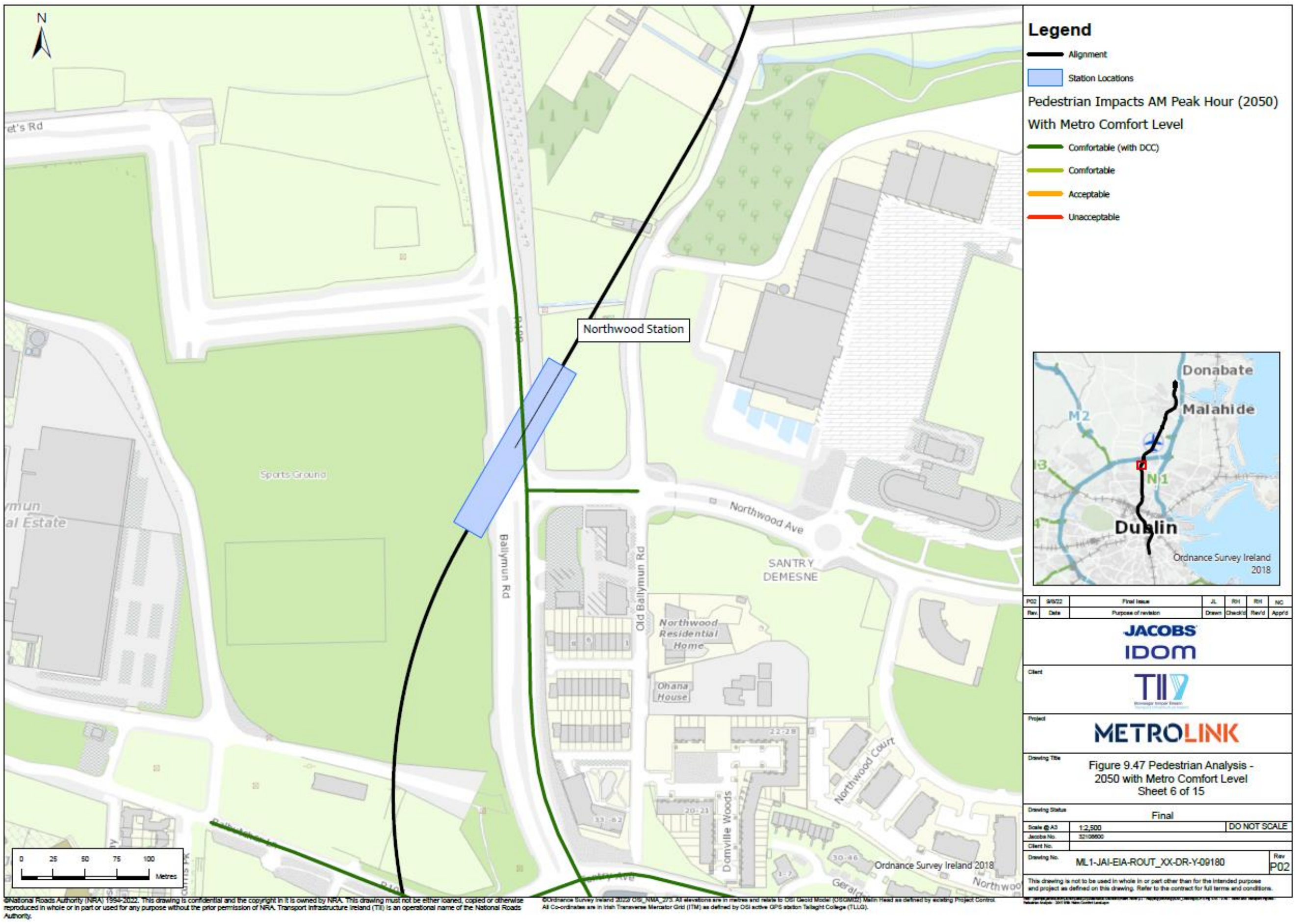


Figure 6.8: Pedestrian Comfort Assessment with the Project 2050

The assessment indicates that there is no change in the pedestrian comfort levels from the baseline scenario when the Project is in operation and therefore there is an imperceptible impact to pedestrians from the Project.

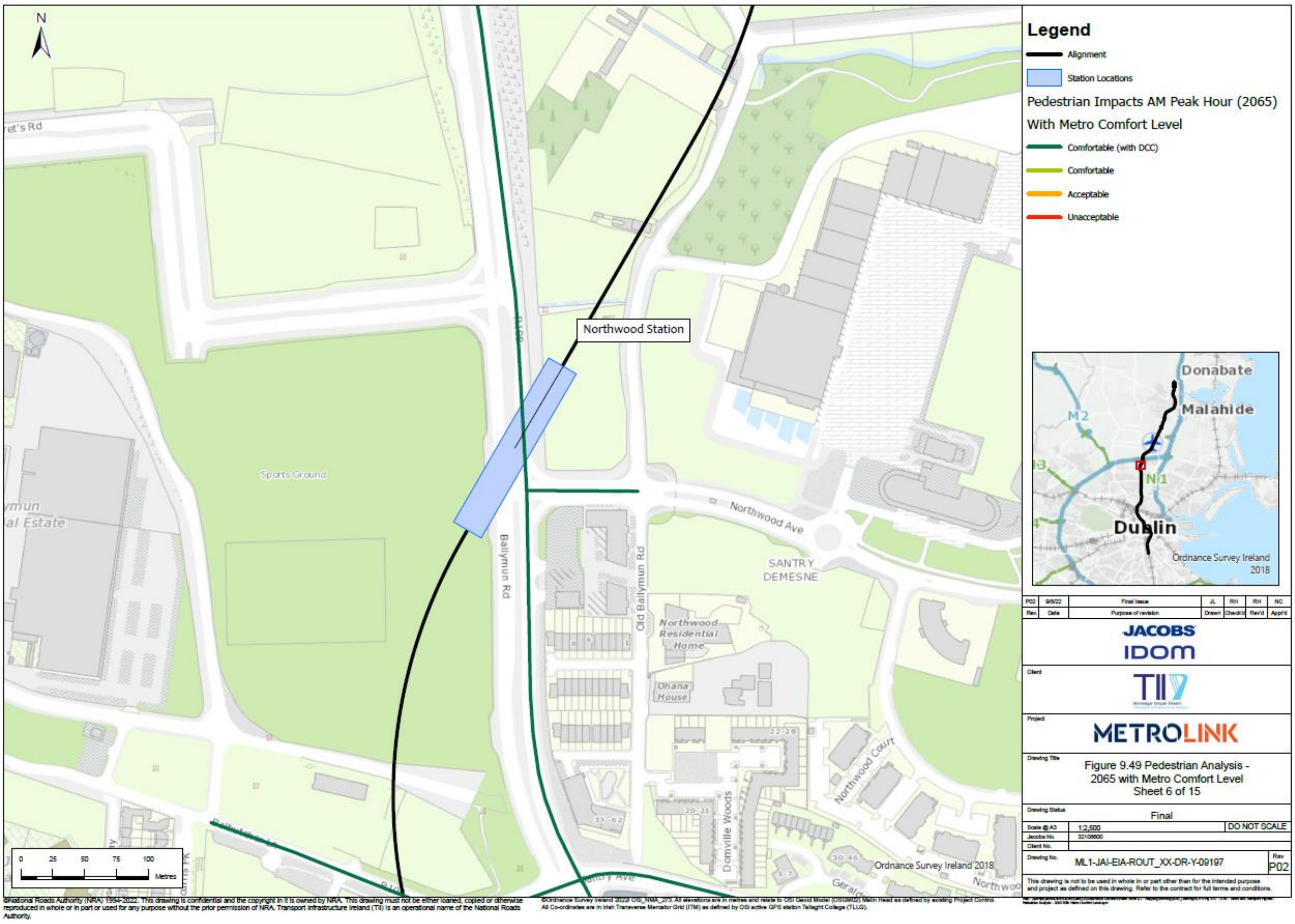


Figure 6.9: Pedestrian Comfort Assessment with the Project -2065

6.1.4 Cyclist Impact Assessment

The future street level layout at Northwood Station provides for a one-way cycle lane on both sides of the R108 within the Project Boundary. Crossing facilities will also be provided at the R108/Northwood Avenue signalized junction, to access the station's cycle parking facilities. The improvements made to the cycling infrastructure around the proposed Northwood station will result in the Quality of Service improving from Level B in the Baseline scenario, to Level A in the Operational Phase.

A methodology has been applied to determine the potential demand for cycle parking at each of the stations. This methodology utilises the number of boarding and alighting passengers, the distance of origin/destinations from the station, and the location of the station. The passenger demand from an earlier Opening Year has been utilised to determine the potential cycle demand in the Opening Year, and in the Opening Year +5 Years.

This approach has informed the design and the number of cycle parking spaces provided at each station. Other factors such as the availability of land, potential future land uses, and parking supply and the location of the station have also been taken into consideration by the design team in determining the quantum of cycle parking spaces provided. For the Northwood Station, a total of 204 cycle spaces are proposed. Cycle access at the station will be provided through enhanced cycling facilities around the station.

6.1.5 Road Safety

A Stage 1 Road Safety Audit has been undertaken for all of the proposed highway works for the Project. This is under a separate cover.

7. Summary

In Scenario A, Northwood Station will facilitate approximately 5,300 passenger movements over the 12hr peak period (07:00-19:00) in 2035, rising to almost 7,000 passengers in 2050, and almost 9,000 passengers in 2065. In Scenario B, Northwood Station will facilitate approximately 5,200 passenger movements over the 12hr peak period (07:00-19:00) in 2035, rising to 6,300 passengers in 2050, and 7,800 passengers in 2065.

The main catchment origins and destinations of the people boarding and alighting at the Northwood Station will be:

- Origins from residential areas of Lymewood Mews and Hampton Wood;
- Origins from Coultry residential area;
- Destinations at Northwood Business Park; and,
- Destinations at business developments to the west of the R108 Ballymun Road.

The Project will result in increases in public transport mode share by up to 10 percentage points for zones around Northwood Station in both Scenario A and Scenario B 2065. There will be negligible changes in Car mode share in 2035 in both scenarios, however a reduction in Car mode share of up to 5 percentage points can be seen in zones to both the east and west of the route in both Scenario A and Scenario B in 2050 and 2065. There is a reduction of approximately 3,200 car trips to and from the zones surrounding Northwood Station over the 12hr peak period in Scenario A 2065. Scenario B 2065 sees a reduction of 2,700 car trips between the Do Minimum and Do Something scenarios.

The proposed Project will result in improvements to the public transport journey times for people in the area, such as a saving of approximately 20 minutes for journeys from Ballymun to Sandyford in the AM period. For journeys from Ballymun to Dublin City Centre locations such as O'Connell Street and St. Stephen's Green, there will be savings of between 10 and 17 minutes, and for journeys from Ballymun to Swords East savings of approximately 19 minutes.

The station will also provide for 204 cycle parking spaces. The existing and future receiving pedestrian environment is sufficient to cover the anticipated passenger demand, with all links surrounding the station meeting DCC guidance and receiving a 'Comfortable' assessment in the Scenario A 2050 and 2065 AM peak hours.

In overall terms, the Northwood station will provide for improvements to the public transport network resulting in decreases in private car usage/trips, increases in public transport usages and will facilitate walking and cycling to the station, without significantly impacting on the operation of the road network in the area.

Appendix A. Traffic Flows Diagrams

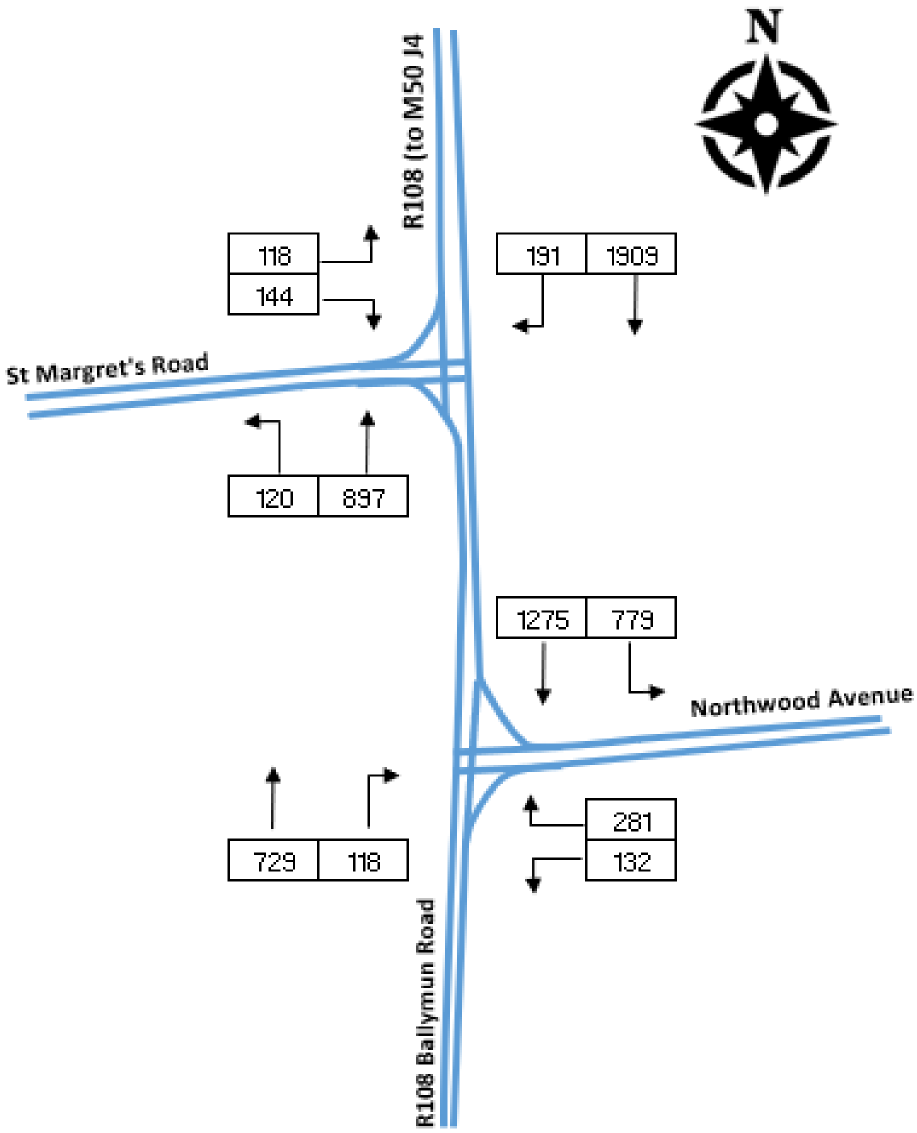


Figure 7.1: R108 Ballymun Rd / St Margaret's / Proposed Northwood - AM 2018 Baseline Flows

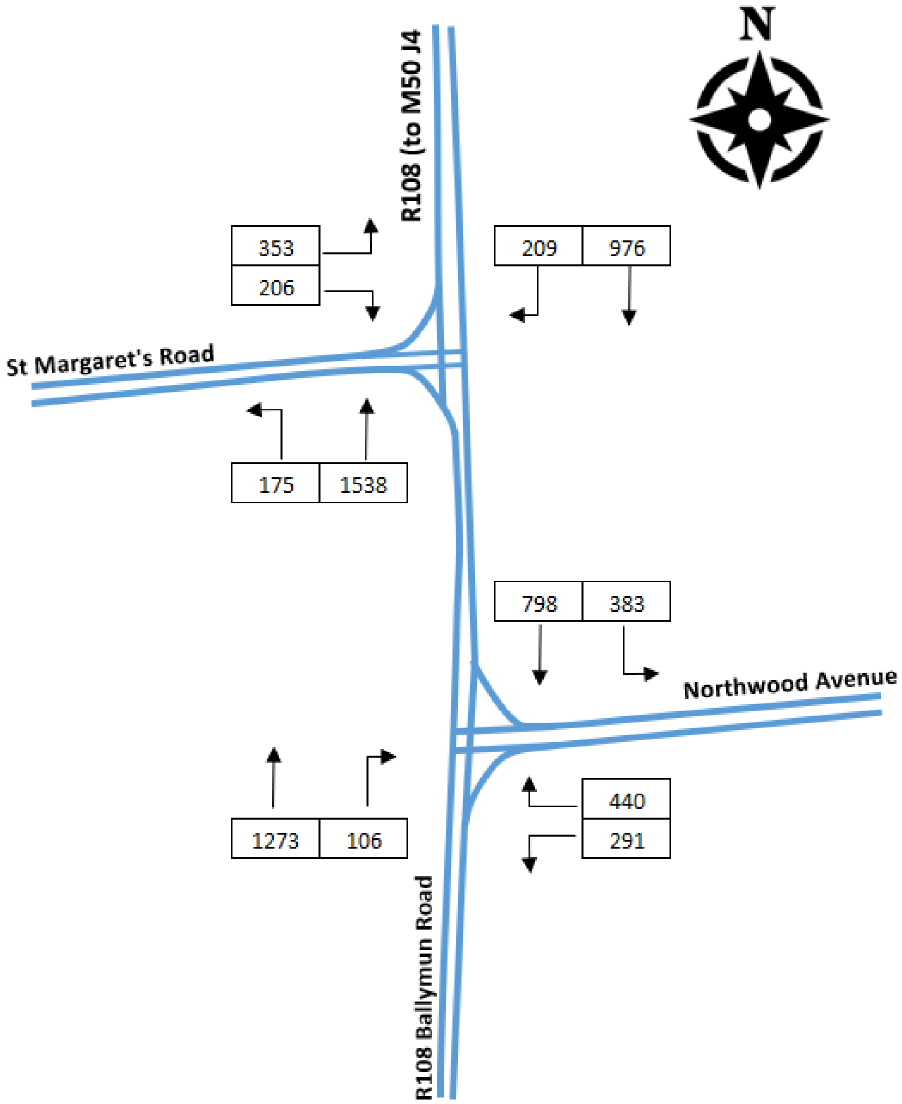


Figure 7-2: R108 Ballymun Rd / St Margaret's / Proposed Northwood - PM 2018 Baseline Flows

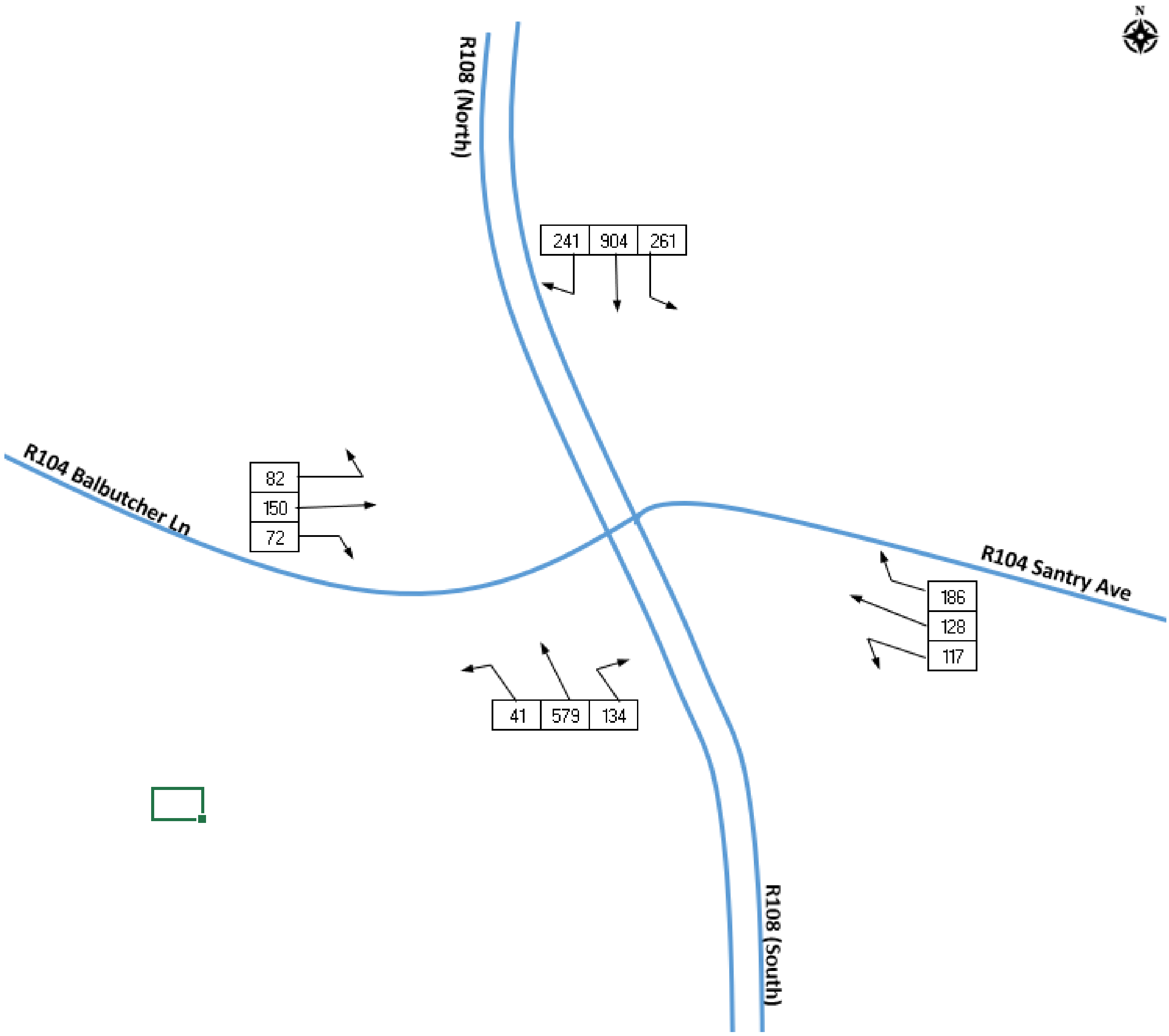


Figure 7-3: R108 Ballymun Rd / R104 Santry Ave / Balbutcher Lane - AM 2018 Baseline Flows

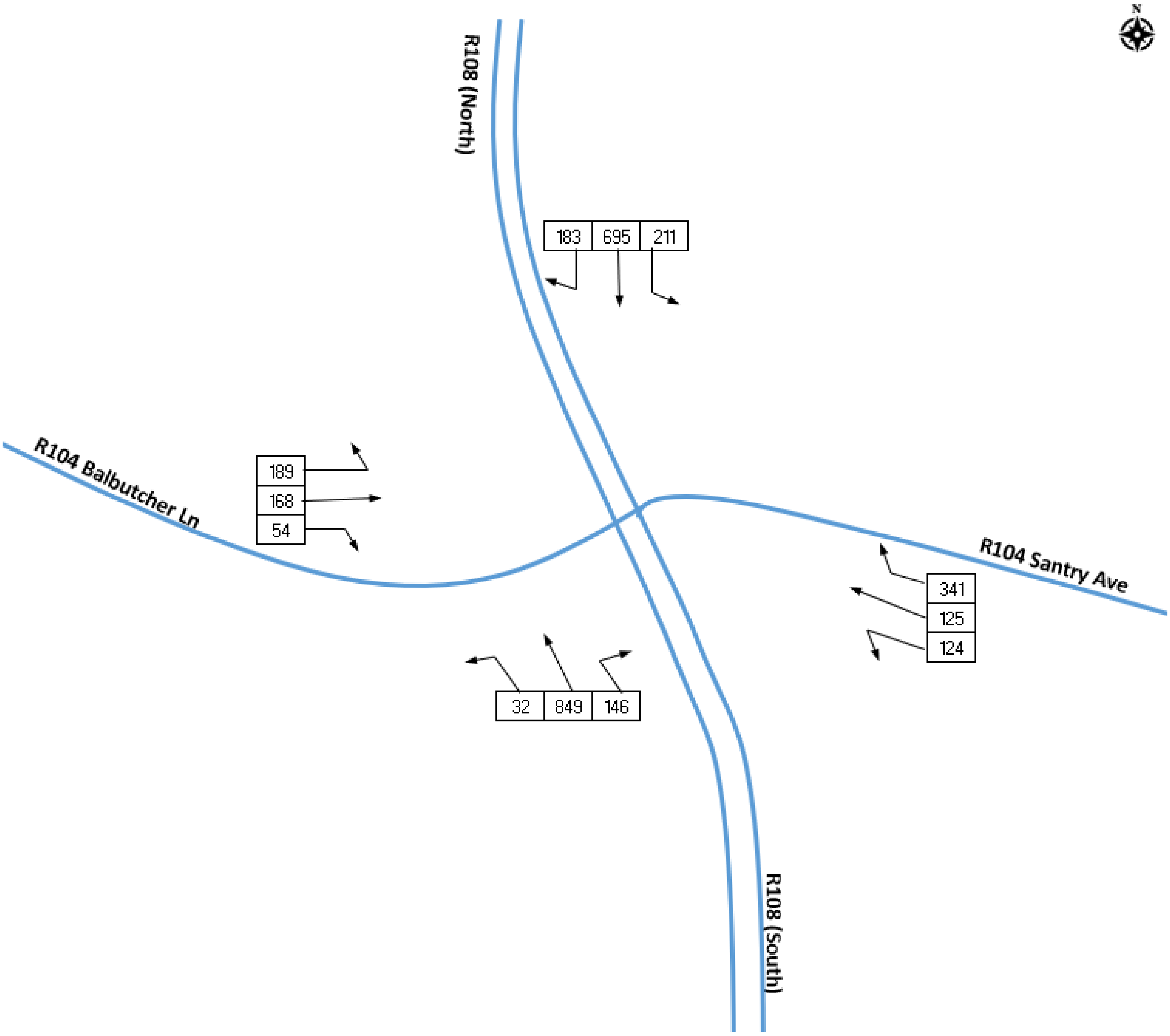


Figure 7-4: R108 Ballymun Rd / R104 Santry Ave / Balbutcher Lane - PM 2018 Baseline Flows

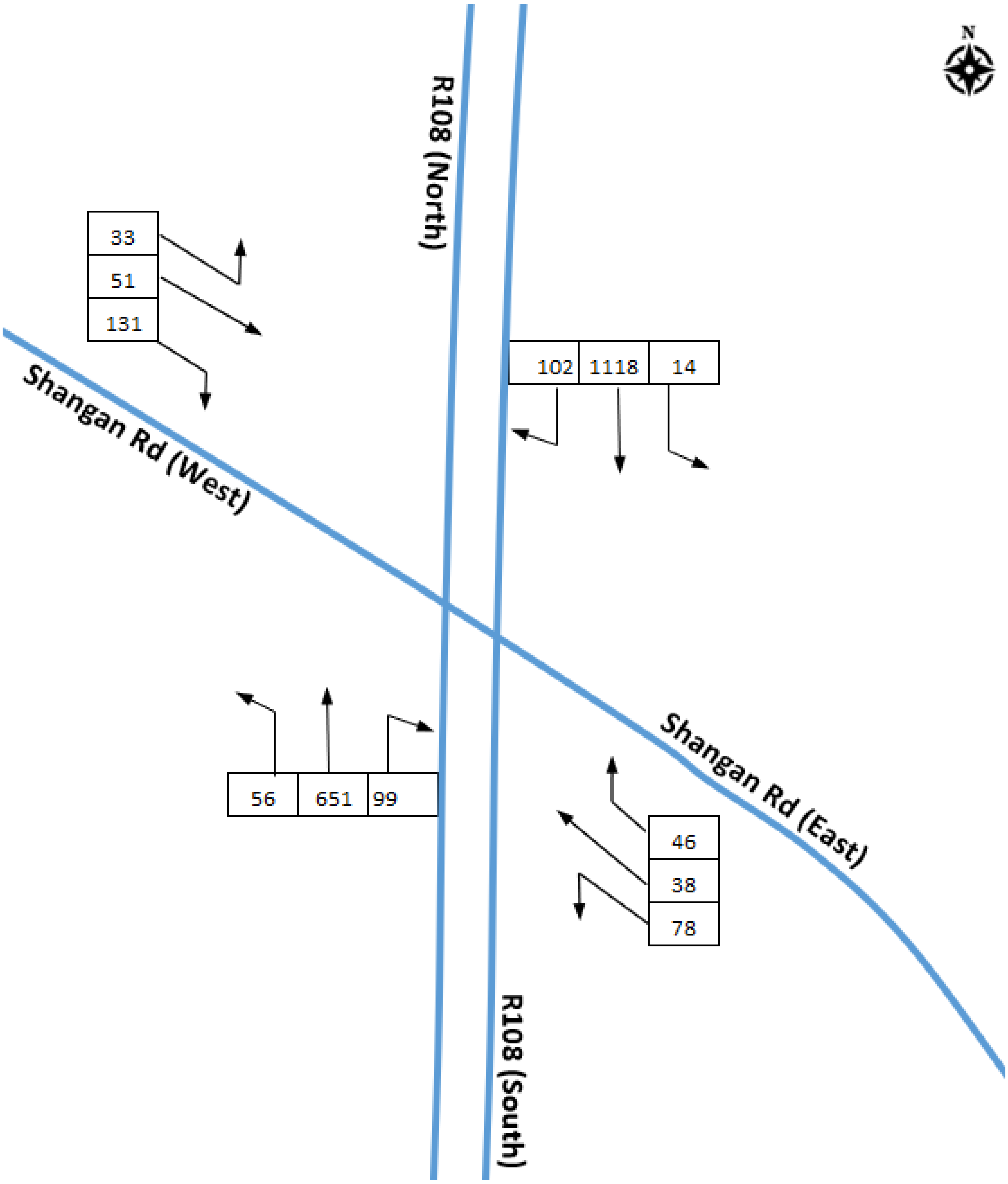


Figure 7-5: R108 Ballymun Road / Shangan Road Signalised Junction - AM 2018 Baseline Flows

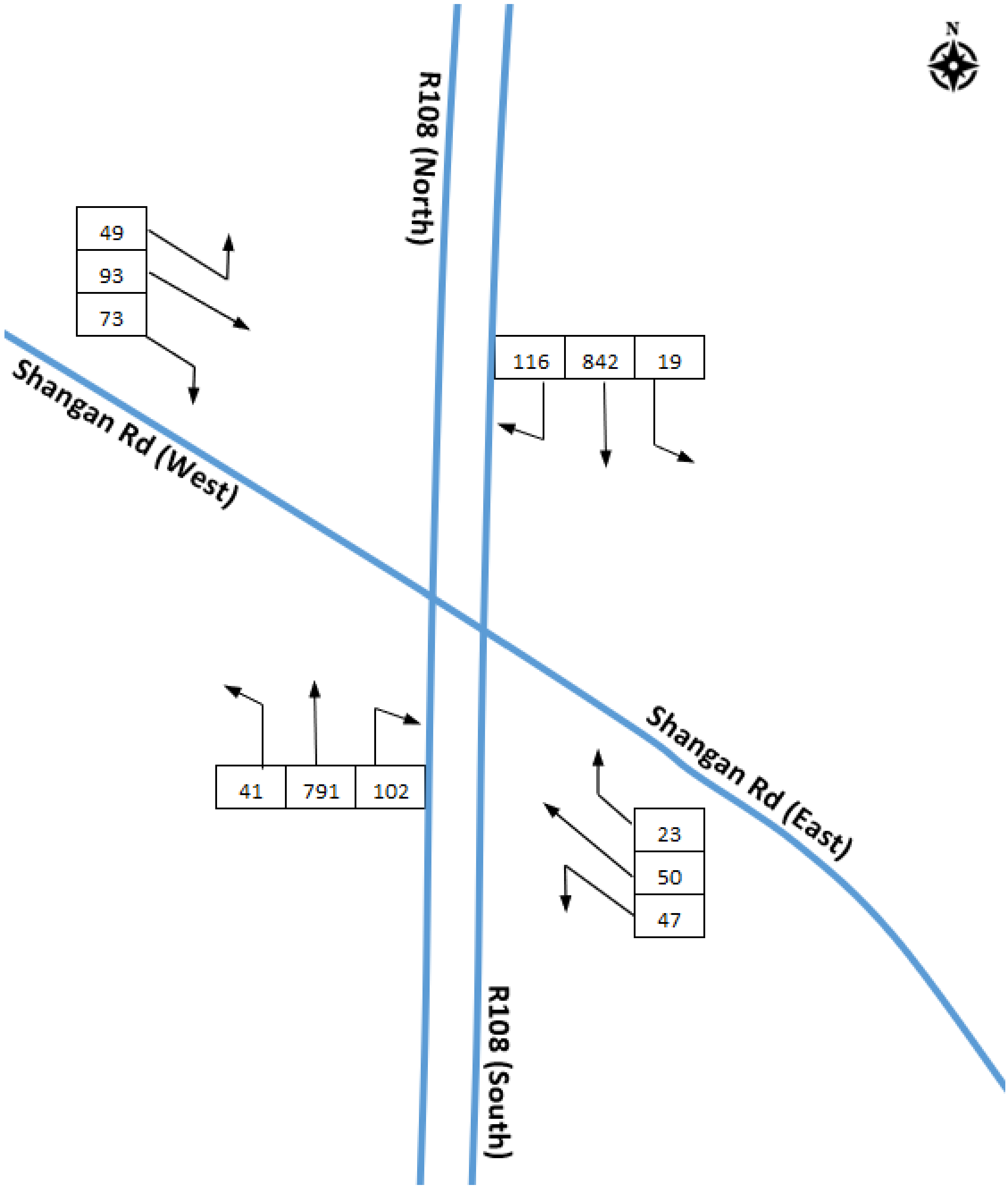


Figure 7-6: R108 Ballymun Road / Shangan Road Signalised Junction - PM 2018 Baseline Flows

Contents

1. Introduction

1.1 Background

Jacobs/IDOM has been commissioned to undertake the Environmental Impact Assessment Report (EIAR) in support of the proposed Dublin MetroLink project (hereafter referred to as the proposed Project). The EIAR is being prepared to assess the environmental impacts of the proposed Project, including in relation to traffic and transport.

This Traffic and Transportation Assessment (TTA) assesses the operational impacts associated with the proposed Ballymun Station on the traffic and transport network in the local area. TTA's have been prepared for each individual station as well as an overall TTA for the proposed Project.

Jacobs/IDOM has also been commissioned to undertake a scheme traffic management plan (STMP). The STMP is a standalone report within the EIAR. The STMP assesses the impact of the construction of the Project on all road users and proposes mitigation measures where appropriate.

A summary of the TTAs and STMP will be included within the Traffic and Transportation chapter of the EIAR.

1.2 Assessment Scenarios

In order to provide a rounded assessment of the proposed Project, its impacts have been reviewed for a range of future years, and in the context of two alternative future scenarios. The forecast years are 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). As outlined in Table 1.1, Scenario A includes the proposed Project and committed transport schemes only, while Scenario B includes a range of further planned schemes depending on the forecast year.

Table 1.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project.
Do Minimum Scenario	Committed transport schemes in the absence of the Project.
Do Something - Scenario A	Scenario with the Project and committed transport schemes only.
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for Opening year (2035) and planned schemes under the Transport Strategy for the GDA for the Design Year (2050) and the Forecast Year (2065).

Committed transport schemes in the Do Minimum scenario and in Scenario A, that have been progressed through planning and are either under construction or are programmed into the capital expenditure budget, include, but are not limited to:

- Luas Green Line Capacity Enhancement – Phase 1;
- BusConnects Dublin Area Bus Network Redesign; and

- BusConnects Fares and Ticketing.

Scenario B represents the likely future receiving environment and is based on the delivery of the schemes identified within the National Development Plan for 2035, and on the implementation of the NTA's Greater Dublin Area (GDA) Transport Strategy for 2050 and 2065. As such, this scenario considers the cumulative impacts of interactions between other projects that are most likely to impact on transport movements in the area. Schemes included in this scenario are, but are not limited to:

- Luas Green Line Capacity Enhancement - Phase 2;
- Luas Finglas;
- Luas Lucan;
- BusConnects Core Bus Corridors; and
- DART+.

More information on each modelled scenario is available in the Transport Modelling Plan (Appendix A9.3).

1.3 Project Overview

The proposed Project will be a high-capacity, high frequency rail line running from Swords to Charlemont, linking Dublin Airport, Irish Rail, the Dublin Area Rapid Transit (DART), Dublin Bus and Luas services, improving integration across public transport network in the Greater Dublin Area (GDA).

As well as linking major transport hubs, the proposed Project will connect key destinations including Swords, Ballymun, the Mater Hospital, the Rotunda, Dublin City University and Trinity College with much of the 19-kilometre route running underground.

When operations commence, there will be trains every 3 minutes during peak periods. This can rise to a service every 90 seconds, with the system capable of carrying a peak line flow of 20,000 passengers per hour in each direction.

1.3.1 Ballymun Station

Ballymun Station will be located adjacent to the west side of the R108 Ballymun Road, under the site of the old Ballymun Shopping Centre and car park, which has been demolished. This site is currently green open space and it has been zoned for other mixed use development.

The location for Ballymun Station will have minimal impact on the R108 Ballymun Road during the Construction Phase. It is also sufficiently set back from the R108 to accommodate the layout for a new bus lane and a bus stop along both carriageways to be provided by BusConnects which will enable passengers to change between buses and the station. The existing pedestrian crossing located towards the southern end of station by the entrance will be increased in width to 4m for reasons of road safety.

Pedestrian access to the underground platform will be possible through a main stairs entrance located to the south of the station, and a passenger lift. The pedestrian crossing in the south east of Ballymun Station will be upgraded with ramps, tactile paving, new traffic signals and a crossing lane for bikes, i.e., a toucan crossing.

Interchange facilities include two bus stops on either side of the R108 as part of the proposed Bus Network Redesign scheme, as well the provision of car parking spaces on either side of the R108 and a total of 292 bicycle parking spaces.

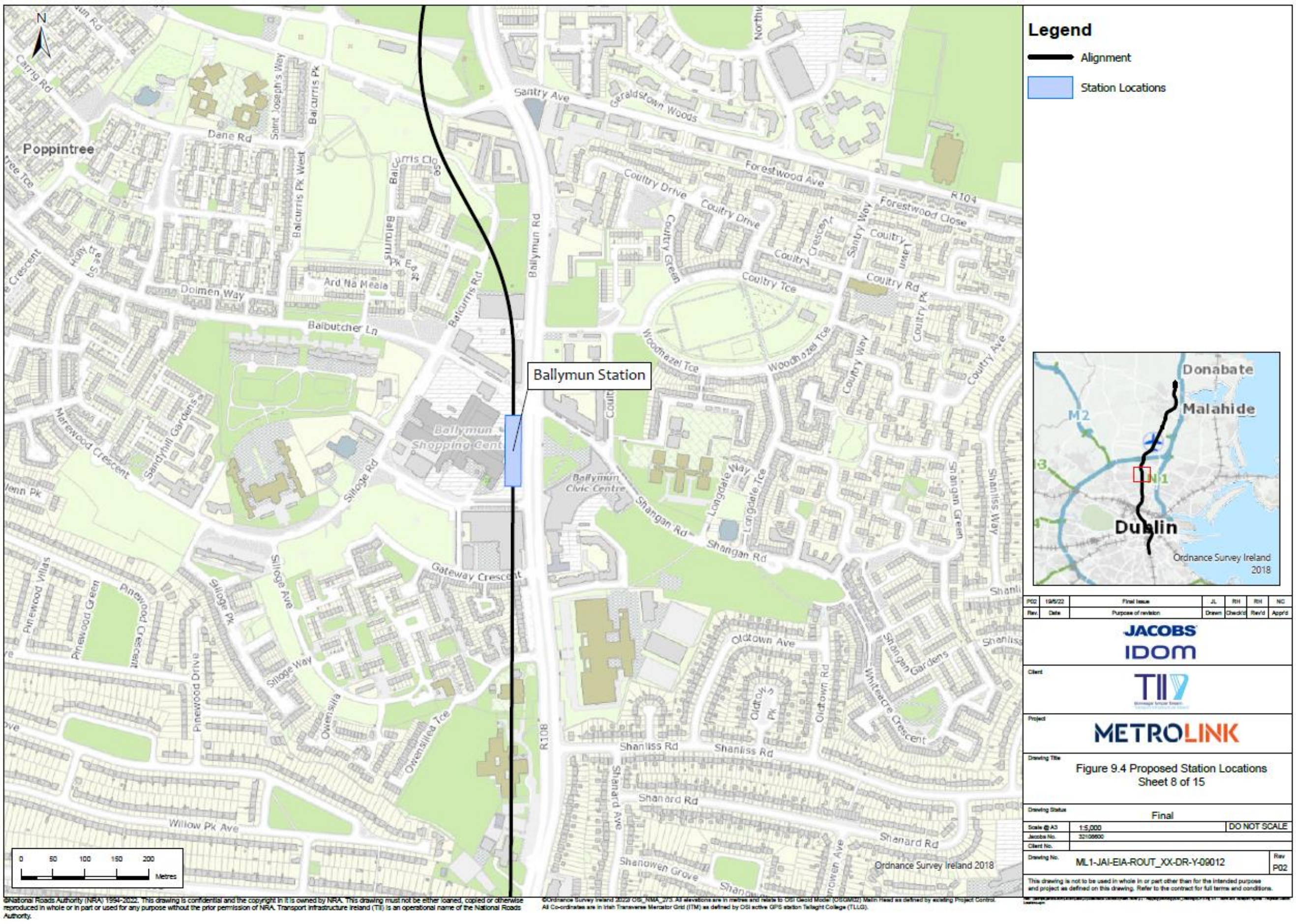


Figure 1.1: Proposed Ballymun Station Location

2. Policy Context

Reference should be made to the Chapter 3 of the Overall Project TTA and Planning Policy Report (ML1-JAI-PLD-ROUT_XX-RP-Y-00020) for further detail on the overall project in relation to key national and regional policies.

This section will focus on an assessment of the Ballymun Station proposals in relation to the following key local policies:

- Ballymun Local Area Plan

The National Spatial Strategy states that in order to promote sustainable development, it is essential to consolidate the physical growth of Dublin City. This should be supported by effective land use policies for the urban area which underpin increased investment in high quality public transport infrastructure. It outlines a number of requirements that are key to creating a compact and economically vibrant city including:

- The effective integration of land use and transportation policy; and
- Facilitating the movement of people and goods through an effective public transport system.

The Regional Planning Guidelines promote the consolidation of development within the metropolitan area, and the achievement of sustainable densities in tandem with a much-enhanced multi-modal transport system.

The Transport Strategy for the Greater Dublin Area 2016-2035 and the Regional Planning Guidelines are required under legislation to be consistent with each other, and therefore the purpose of the Strategy is “to contribute to the economic, social and cultural progress of the Greater Dublin Area by providing for the efficient, effective and sustainable movement of people and goods.” The Strategy sets out the necessary transport provision for the period up to 2035, to achieve this objective for the region, including the provision of the Metro.

2.1 Ballymun Local Area Plan 2017

The Ballymun Local Area Plan (LAP) is part of the Dublin City Council Development Plan 2016 – 2022. The LAP aims to facilitate the development of several key sites, and addresses issues related with infrastructure, economic development, public realm and community/sporting facilities to achieve a sustainable city neighbourhood.

The LAP notes the development of the proposed Project as ‘an essential component of the regeneration process and attracting and delivering high density mixed-use developments along the Main Street and M50 lands.’ Existing vacant lands constitute an opportunity to deliver high density schemes along the proposed Project alignment.

It is also highlighted that any rail line proposal along the Main Street should avoid segregating East and West Ballymun and should instead enhance permeability, in line with the overall objectives of the LAP.

2.2 Draft Dublin City Council Development Plan 2022-2028

Building on the objectives of the Dublin City Council Development Plan 2016-2022, the Draft Dublin City Council Development Plan 2022-2028 recognises the opportunities presented by MetroLink to achieve effective integration of land-use and transportation in the area.

SMT20: Key Sustainable Transport Projects:

- To support the expeditious delivery of key sustainable transport projects including MetroLink, BusConnects, DART+ and Luas Expansion Programme so as to provide an integrated public transport network with efficient interchange between transport modes, serving the existing and future needs of the city and region.

In addition, the Draft Plan highlights the role the proposed Project will play in delivering opportunities for developing the public ream around proposed stations.

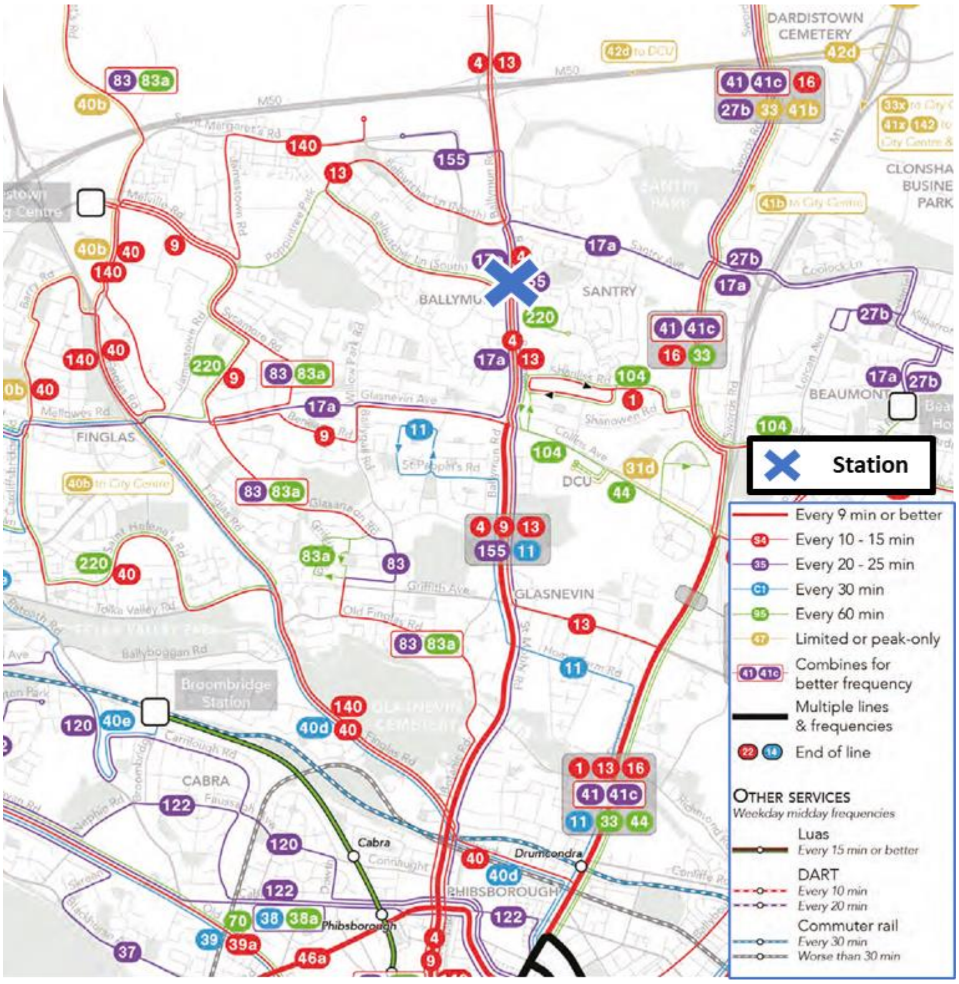
3. Baseline Conditions

This section describes the existing receiving environment within the vicinity of the Ballymun Station and the wider environs, and identifies the future receiving environment for all modes of transport if conditions are planned to change in advance of the construction of the Project, such as the delivery of other proposed infrastructure projects.

3.1 Existing Public Transport Network

Figure 3.1 shows the existing bus services in the surrounding area. The area surrounding the Ballymun Station is served by several bus services with less than 15min frequencies, many of which have stops in close proximity to the station. Within a 600m buffer from the station there are more than 15 bus stops located along the Ballymun Road, Shangan Road and Santry Avenue (see Figure 3.2).

The nearest bus stop is at the southeast of the station with routes 4 (Monkstown Avenue to Harristown); 13 (Grange Castle to Harristown); and 155 (Ballymun to Bray) serving that specific location. Other relevant bus routes with stops within this buffer include route 17A (Blanchardstown to Kilbarrack); 220 (DCU to Lady's Well Road); 1 (Sandymount to Santry); 104 (Clontarf to DCU). These are the existing bus stops and existing bus services; the location of the bus stops is currently being reviewed by the NTA as part of the Bus Network Redesign proposals.



(Base Source: www.busconnects.ie)

Figure 3.1: Existing bus network around Ballymun Station

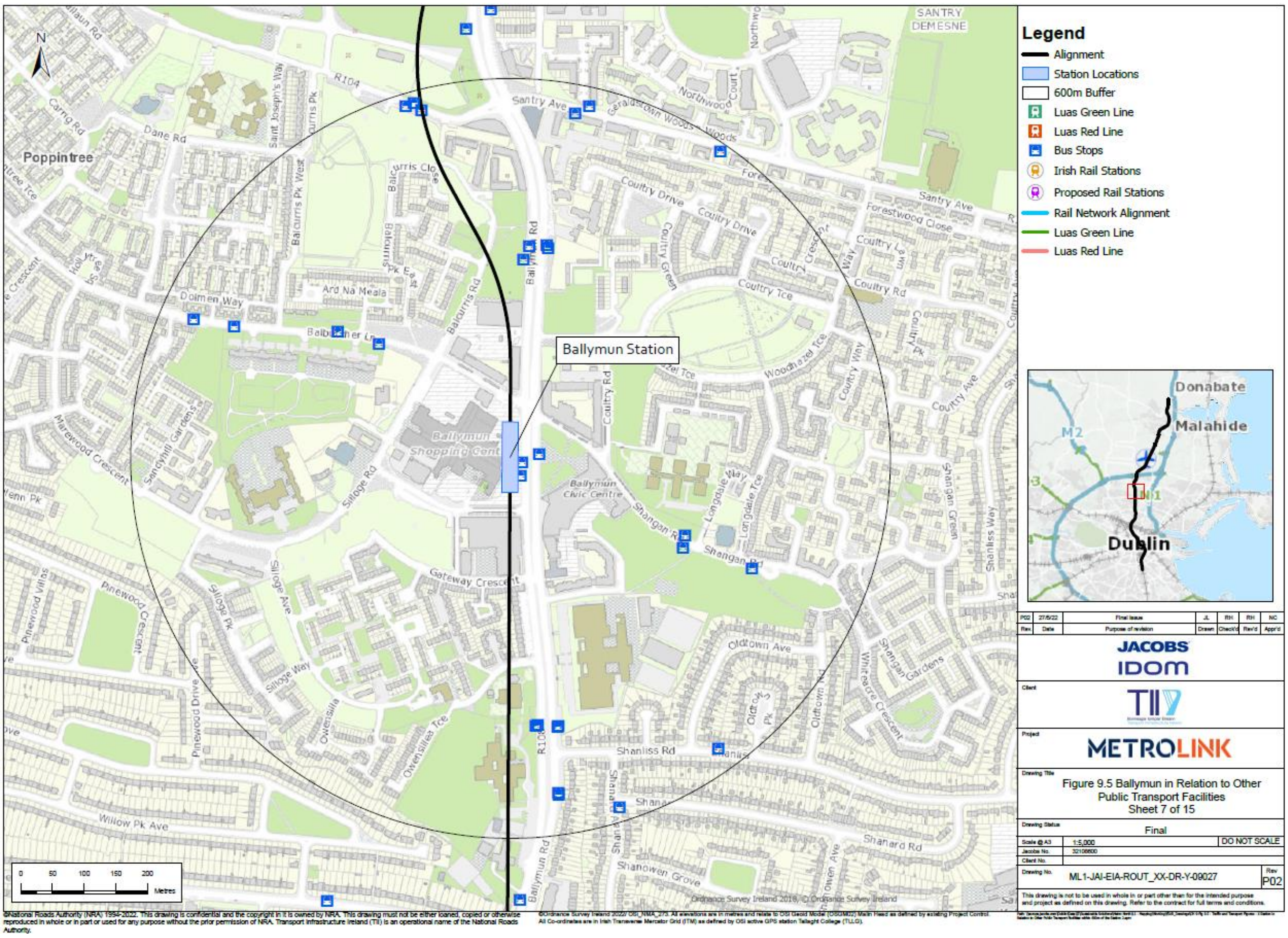
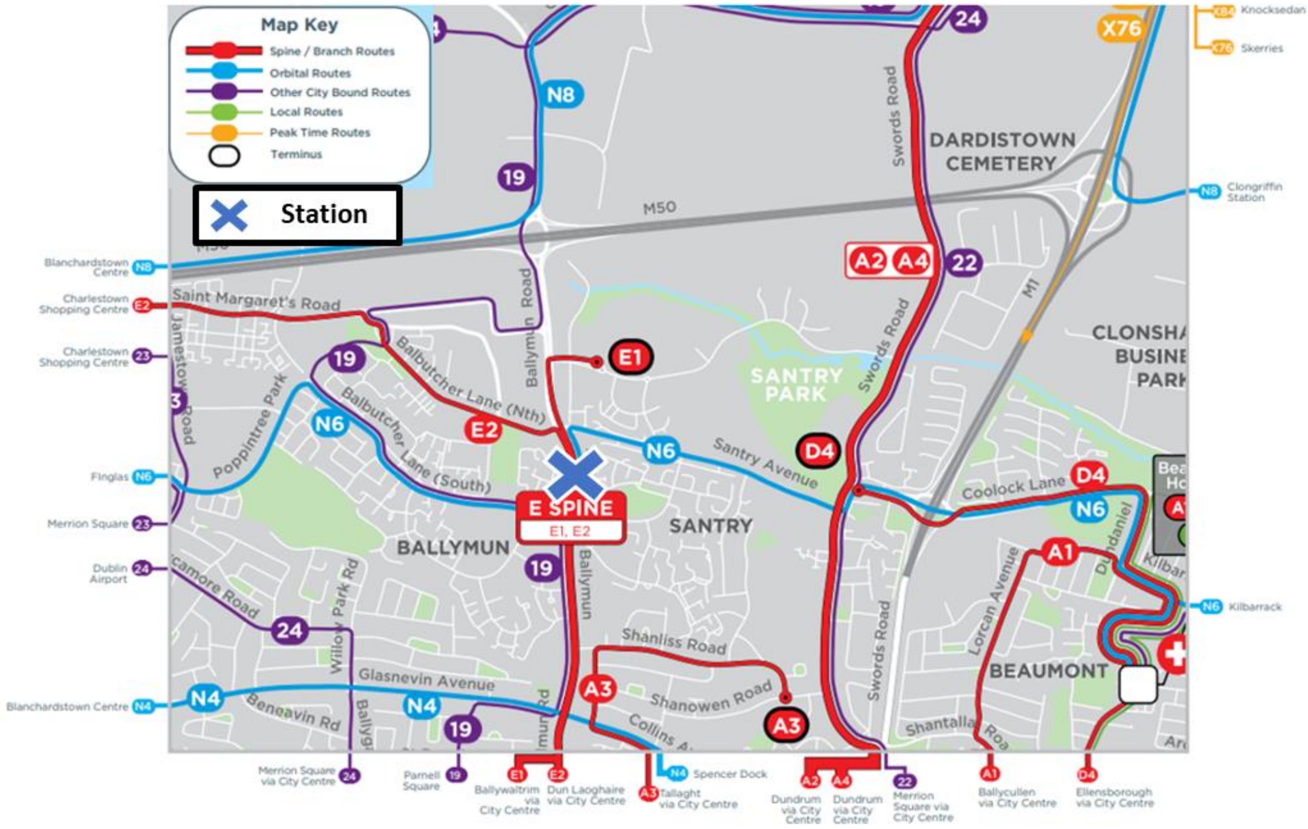


Figure 3.2: Transport facilities within 600m buffer

3.2 Future Receiving Environment – Public Transport Network

The Ballymun Station is also located along the proposed E1 and E2 Spine as part of the Bus Network Redesign proposals as shown in Figure 3.3 and in close proximity to orbital route (N8). Routes E1 and E2 will have frequencies of 8 to 10min on weekdays giving the Spine E a combine frequency of 5min during weekdays. The N6 orbital route will have a frequency of 10min during weekdays and 15min during weekends. There is also a 'Other city bound route', the 19, which also runs past the proposed Ballymun Station with a frequency of one bus every hour every day.



(Base Source: www.busconnects.ie)

Figure 3.3: Proposed Bus Network Redesign around Ballymun Station

3.3 Existing Road Network

The road network in the vicinity of the Ballymun Station comprises the R108 (Ballymun Road) in the east, Sillogue Road in the south, Balbutcher Lane in the west and Shangan Road in the north (see Figure 3.4).

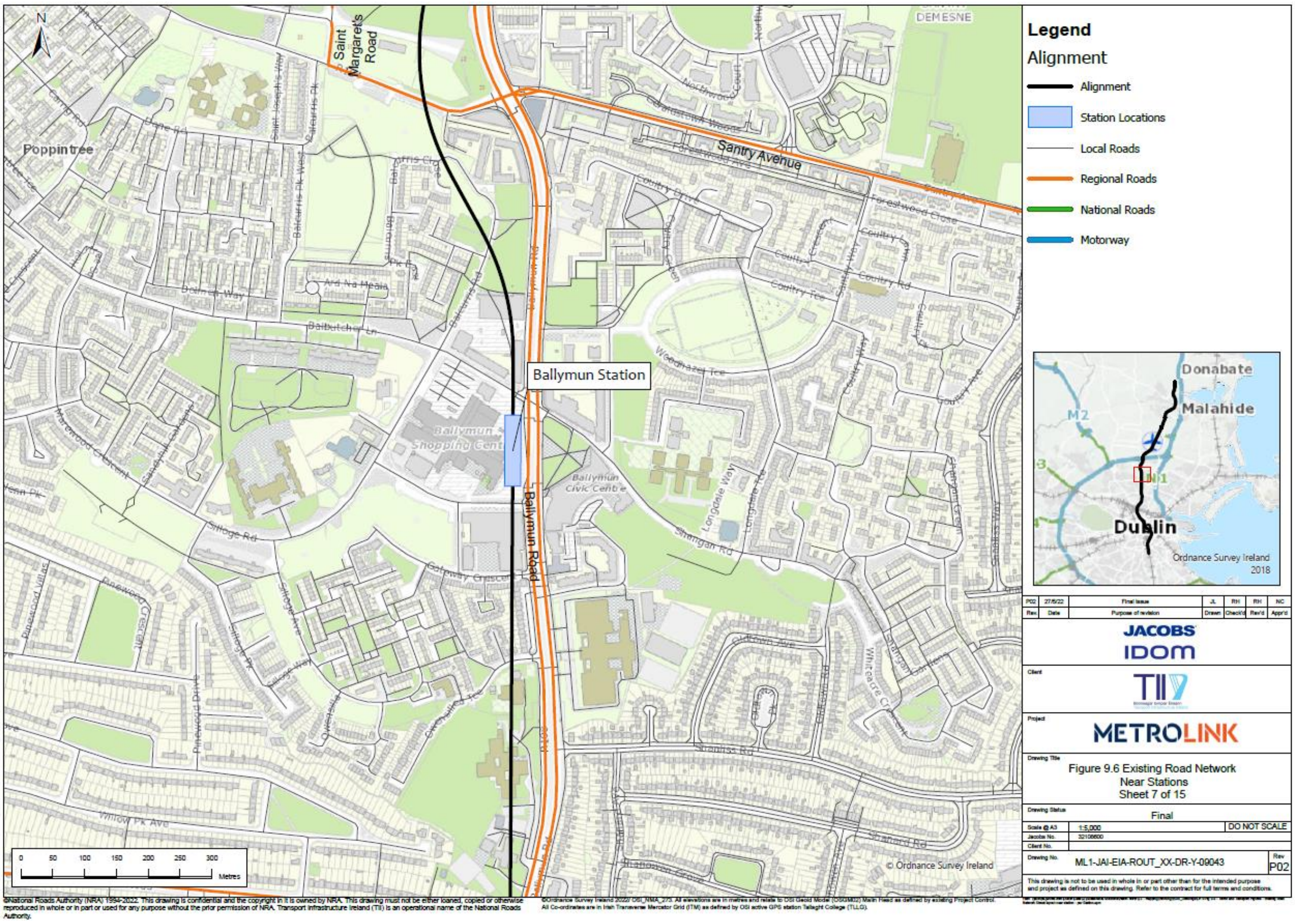


Figure 3.4: Street layout near Ballymun Station

The R108 is a two-way dual carriageway and is part of the regional road network of the GDA. In its most proximate section to the proposed Ballymun Station, the R108 has a width of approximately 25m and comprises two traffic lanes and a bus lane on each direction. This road provides links from the M50 in the north and Glasnevin in the south.

Sillogue Road, Balbutcher Lane and Shangan Road are residential roads and provide access from areas in the vicinity to the Ballymun shopping centre. Shangan Road is a single carriageway road of around 6.5m wide and two traffic lanes per direction. Balbutcher Lane is a single carriageway of around 10m wide, with two traffic lanes per direction and bays on both sides for bus stops and car parking. Sillogue Road is also a single carriageway with an approximate width of 7m and additional space for on-street parking. This road also provides access to an existing taxi bay facility in the south.

3.3.1 Junction Turning Count Locations

The Data Collection Report (ML1-JAI-TRA-ROUT_XX-RP-Y-00023) details the methodology and specification of traffic surveys undertaken for the proposed Project. The survey locations relevant to Ballymun Station are shown in Table 3.1. Vehicle classifications used for the survey were Car, LGV, OGV1, OGV2, PSV, Motorcycle and Pedal Cycle. PCUs values were also reported using appropriate conversion factors for each vehicle classification. The resulting PCU values from the survey results have been used for the LinSig modelling.

Demand flows were obtained from the turning counts and queue data from either observation from online traffic flow data sources or queue count surveys. Demand data has been used in all the assessment work undertaken.

Table 3.1: Survey Locations Around Ballymun Station

Junction	Type of Survey
R108 Ballymun Road / Shangan Road Signalised Junction	Classified Junction Turning Count (CJTC)

3.3.2 Base Traffic Flows

The 2018 base traffic flows for the AM and PM peak periods, for the junctions detailed in Table 3.1, are provided within Appendix A Traffic Flow Diagrams

Table 3.2 below summarises the 2018 AM and PM Peak results for the R108 Ballymun Road / Shangan Road signalised junction.

Table 3.2: LinSig Model Result Summary_2018 Base Traffic Flows– R108 Ballymun Road / Shangan Road Signalised Junction

Arm	Lane	AM Peak		PM Peak	
		Degree of Saturation (%)	Mean Maximum Queue	Degree of Saturation (%)	Mean Maximum Queue
Shangan Road	**Right / Ahead / Left**	87.9%	8.5	78.9%	5.6
Ballymun Road Northbound	**Ahead / Left**	66.5%	13.5	51.5%	9.8
	Right / Ahead	45.0%	6.3	72.9%	15.5
Shangan Road	**Left / Ahead / Right**	85.1%	9.5	79.7%	8.7
Ballymun Road Southbound	**Left / Ahead**	86.0%	21.8	67.7%	5.3
	Ahead / Right	85.7%	21.3	60.7%	7.5
PRC (%)		**2.4%**		**13.0%**	
Total Delay (pcuHr)		**30.83**		**23.43**	

The analysis indicates that this junction operates within capacity during the base scenarios, with acceptable queueing and reasonable levels of delay.

3.3.3 Forecast Traffic Growth

Forecast traffic growth rates have been obtained from the Eastern Regional Model (ERM) for future years 2035, 2050, and 2065, for the appropriate scenario.

3.4 Future Receiving Environment – Road Network

In the vicinity of Ballymun Station, the R108 Ballymun Road will be realigned as part of the Bus Connects Core Bus Corridor proposals. Through Ballymun Main Street, it is proposed to be narrowed from two general traffic lanes to one general traffic lane in each direction at Ballymun Station, facilitating the provision of parking spaces along this section of Ballymun Road. A designated cycle lane will also be provided on both sides of the R108.

3.5 Existing Pedestrian Network

Facilities and amenities along the Ballymun Road can be accessed by footways that are approximately 3.5m in width. Access to the Ballymun Civic Centre and further facilities across the Ballymun Station are supported by pedestrian crossings provided with tactile pavement, dropped kerbs and pedestrian fencing.

Footways on Sillogue Road are approximately 2m wide and lack of adequate lighting and crossing points lack proper marking and tactile pavement.

Along Shangan Road (west) to Balbutcher Lane, footways range from 2m to 3.3m in width, and crossing points are provided with dropped kerbs and tactile paving. There is a pedestrian crossing where Shanghan Road meets R108 allows for safe crossings to access the station and amenities in the vicinity.

Footways on Balbutcher Lane range from 2.3m to 4.5m in width but surfaces are uneven and at times interrupted by grass verges. Some crossing points have a lack of adequate dropped kerbs and tactile paving.

3.5.1 Pedestrian Link Counts

The Data Collection Report (ML1-JAI-TRA-ROUT_XX-RP-Y-00023) details the locations around Ballymun Station where pedestrian surveys were undertaken.

3.5.2 Baseline Pedestrian Accessibility Review

A baseline accessibility assessment has been undertaken to establish existing walking provision relevant to the proposed Ballymun Station. Catchment maps prepared for the accessibility analysis for walking are based in two criteria, the average speed for each mode and the existing road network. Therefore, maps do not reflect existing access restrictions for private roads and motorised roads.

Figure 3.5 illustrates a 5min walking, 10min walking and 15min walking catchment from the Ballymun Station. Table 3.3 lists local amenities within the 5min walking, 10min walking and 15min walking from the Ballymun Station.

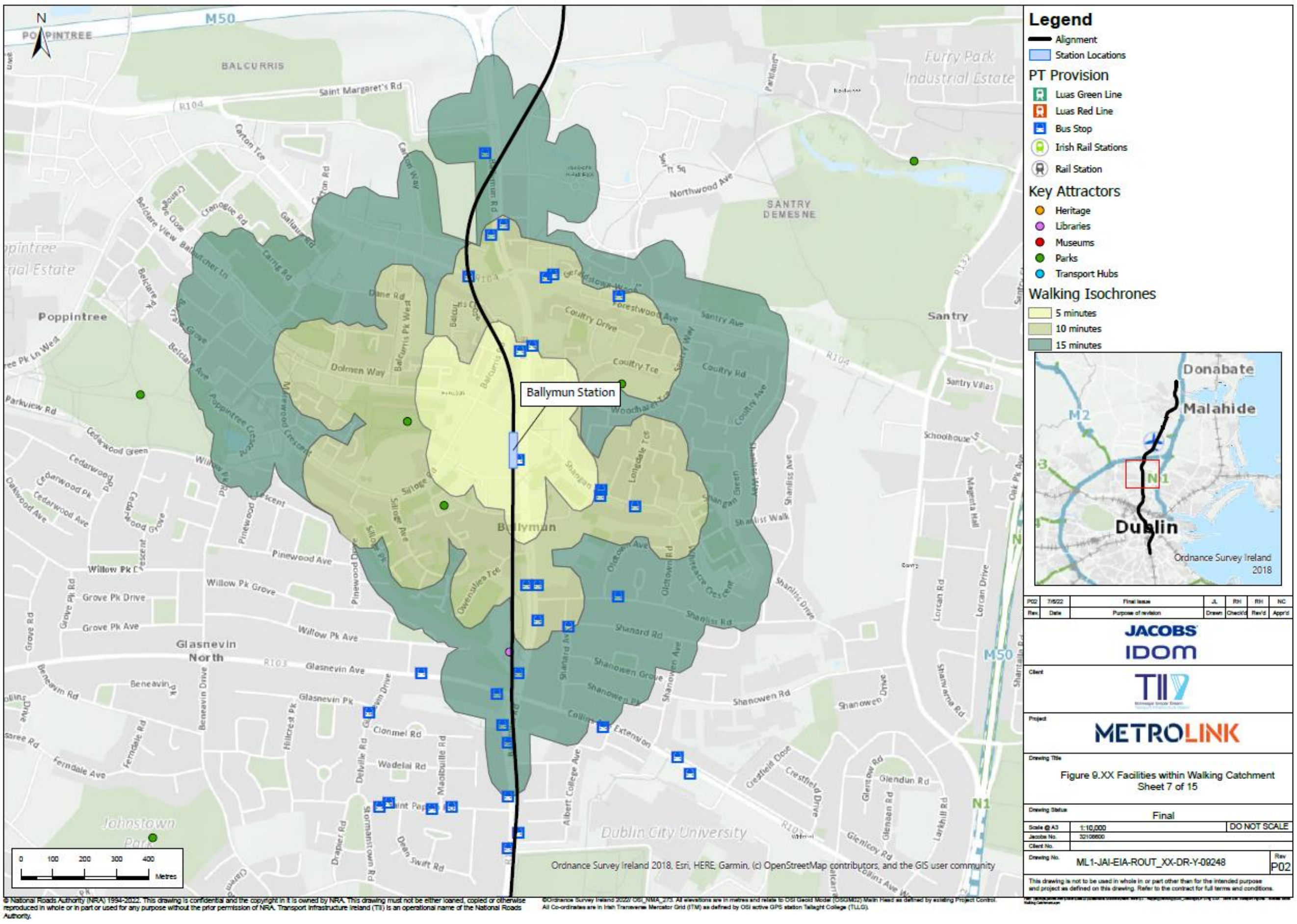


Figure 3.5: Ballymun Station Walking Catchment Area

Table 3.3: Local facilities and amenities within walking catchment area

Facilities within 5min walking	Facilities within 10min walking	Facilities within 15min walking
Ballymun Civic Centre (includes a Healthcare facility) at Ballymun Rd	Scoil an Tseachtar Laoch at Ballymun Rd	Virgin Mary's School
SuperValu grocery store at Sillogue Rd	Trinity Comprehensive Secondary School at Ballymun Rd	Ballymun Community Centre
Pharmacy at Ballymun Rd	Holy Spirit Boys National Catholic School at Sillogue Rd	Coultry Park at Coultry Rd
Garda Station at Ballymun Rd	Shangan Park at Coultry Cl	Ballymun Community Centre at Woodhazel Terrace
An Post at Sillogue Rd		Ballymun Library at Ballymun Rd
Student Village at Ballymun Rd		Setanta GAA Clun at Ballymun Rd

A pedestrian comfort assessment of the baseline volume of passengers has been undertaken for the network surrounding Ballymun Station, as shown in Figure 3.6. Links were assessed against DCC guidance in the first instance, and then against the TfL Pedestrian Comfort Calculator to determine the level of comfort for the available width. The full methodology adopted is detailed in the Overall Project TTA. The assessment shows that all footway provisions currently comply with the DCC standards and are deemed 'Comfortable'.

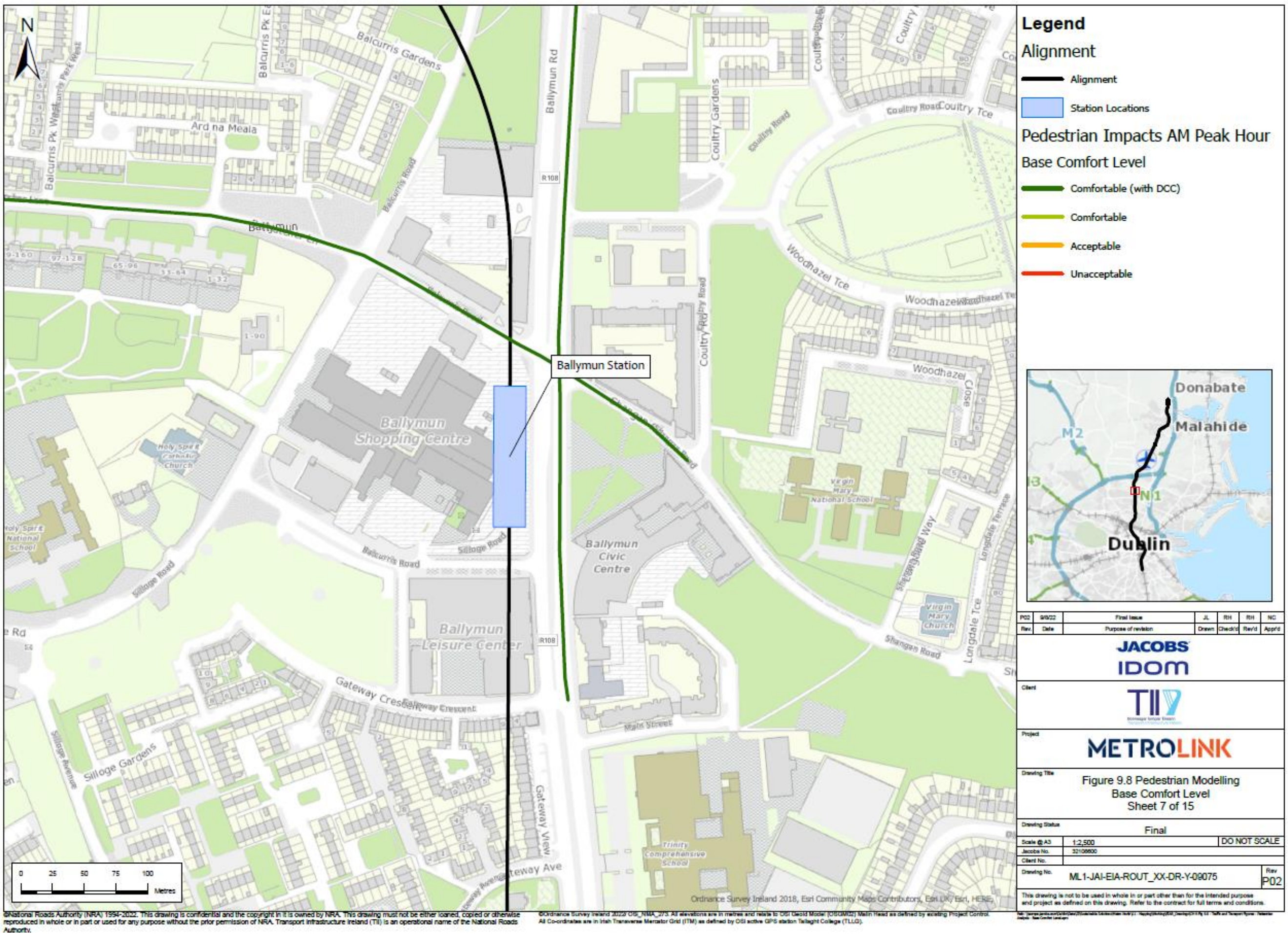


Figure 3.6: Pedestrian Comfort Assessment at Ballymun Station - Baseline

3.6 Future Receiving Environment – Pedestrian Network

The future street level layout at Ballymun Station includes a bus lane in each direction on the R108 to the east of the proposed station. A bus stop will be present on both sides of the R108, with a pedestrian crossing present to the east of the station entrance to facilitate interchange between the bus network and MetroLink vehicles. The pedestrian crossing will be provided as part of the Bus Network Redesign proposals, and an assessment of the pedestrian crossing showing pedestrian Level of Comfort and proposed cycle time can be found in Section 6.1.3.1 of this document.

3.7 Existing Cycle Network

Figure 3.7 illustrates Ballymun Station within the GDA Cycle Network. Ballymun Road is a Primary route within the GDA Cycle Network, served by nearby Feeder routes.

Ballymun Station is located adjacent to the shared cycle path/bus lane along the R108. The cycle lane is approximately 1.3m in width, however the total width of the bus lane is approximately 4m.

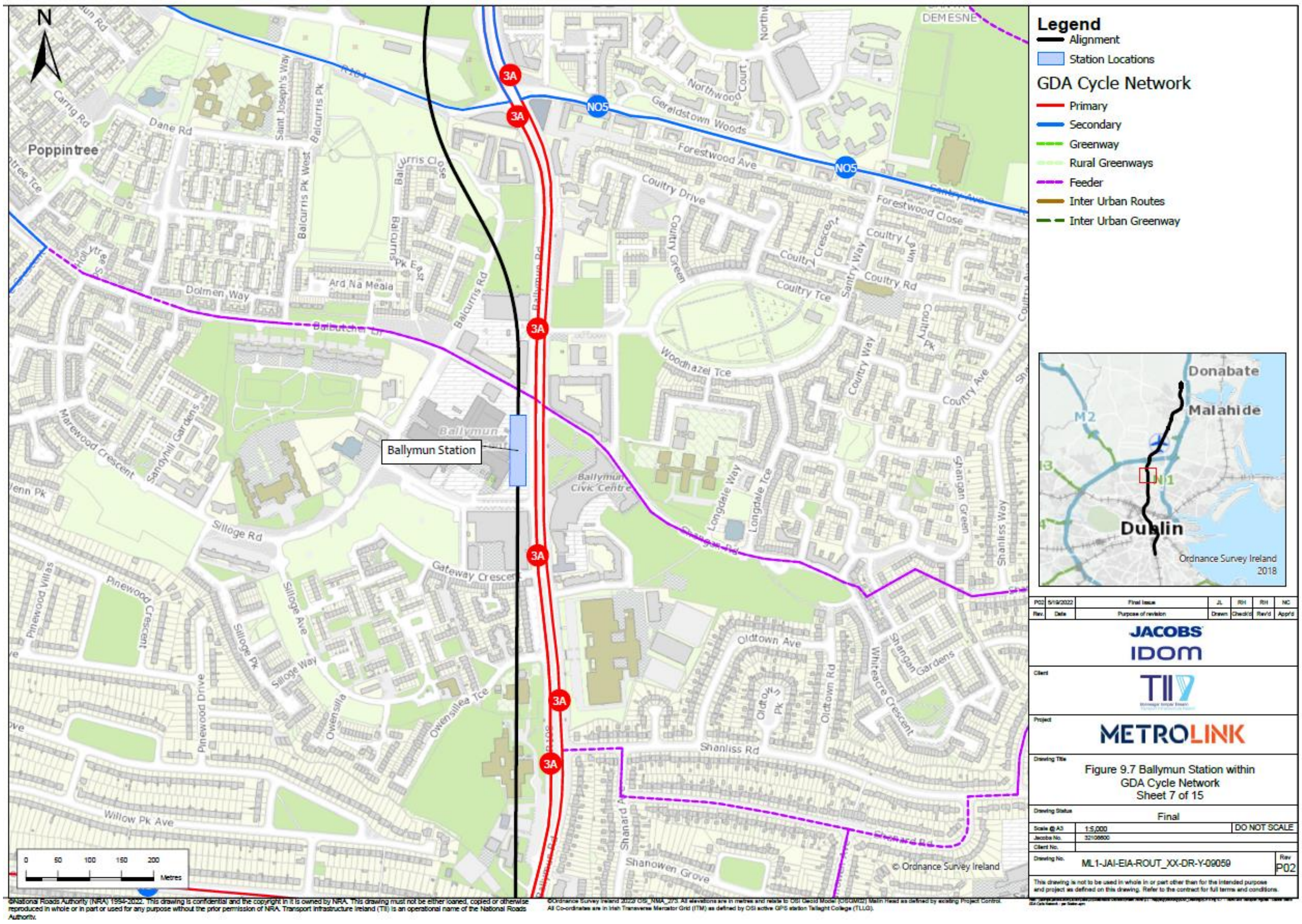


Figure 3.7: Ballymun Station within GDA Cycle Network

3.7.1 Baseline Cycle Accessibility Review

A baseline accessibility assessment has been undertaken to establish existing cycling provision relevant to the proposed Ballymun Station. Catchment maps prepared for the accessibility analysis for cycling are based in two criteria, the average speed for each mode and the existing road network. Therefore, maps do not reflect existing access restrictions for private roads and motorised roads.

Figure 3.8 illustrates a 5min cycling and 10min cycling catchment from the Ballymun Station and the location of existing bike racks and Dublin Bike stations in close proximity to the station.

Table 3.4 below lists local amenities within this catchment.

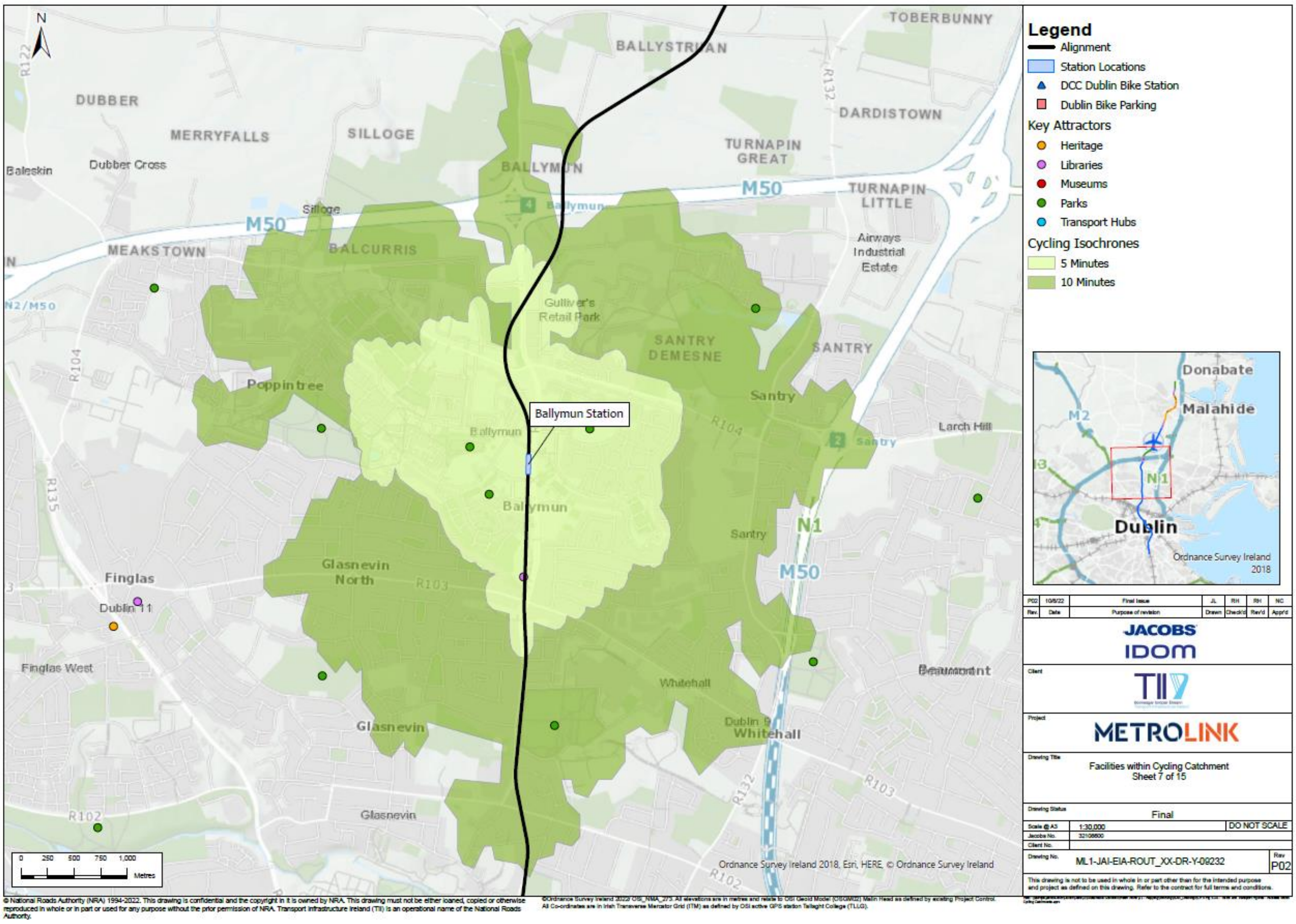


Figure 3.8: Ballymun Station Cycling Catchment Area

Along the R108, the current bike lanes are shared with the bus lanes on both sides of the carriageway. Dropped kerbs with tactile paving are provided at junctions with Shangan Road and Sillogue Road in order to aid the safe crossing of pedestrians.

Table 3.4: Local facilities and amenities within cycling catchment area

Facilities within 5min cycling	Facilities within 10min cycling
Virgin Mary's School	Dublin City University (DCU) at Collins Ave
Ballymun Community Centre	St Kevin's College at Ballygall Rd
Coultry Park at Coultry Rd	Hampstead Private Hospital at Hampstead Ave
Ballymun Community Centre at Woodhazel Terrace	IKEA at St. Margaret's Rd
Ballymun Library at Ballymun Rd	Sillioge Park at St. Margaret's Rd
Setanta GAA Clun at Ballymun Rd	Santry Garda Station at Shanowen Rd
	Omni Park Shopping Centre at Swords Rd
	Grocery stores at Swords Rd and R104
	Santry Community Resource Centre at R104

3.8 Future Receiving Environment – Cycle Network

The proposals for the Bus Connects Core Bus Corridor and for the proposed Project would result in the provision of segregated cycle lanes along the R108. In terms of the proposed Project, the segregated facilities would continue for the extent of the station perimeter.

4. The Proposed Project – Ballymun Station

4.1 Site Location and Development Context

The proposed Ballymun Station is located to the west of Coultry Santry residential area, adjacent to the R108. The proposed development site is also bound to the north by Shangan Road, to the west by Balbutcher Lane and to the south by Sillogue Road. Figure 4.1 below illustrates the location of the proposed development.

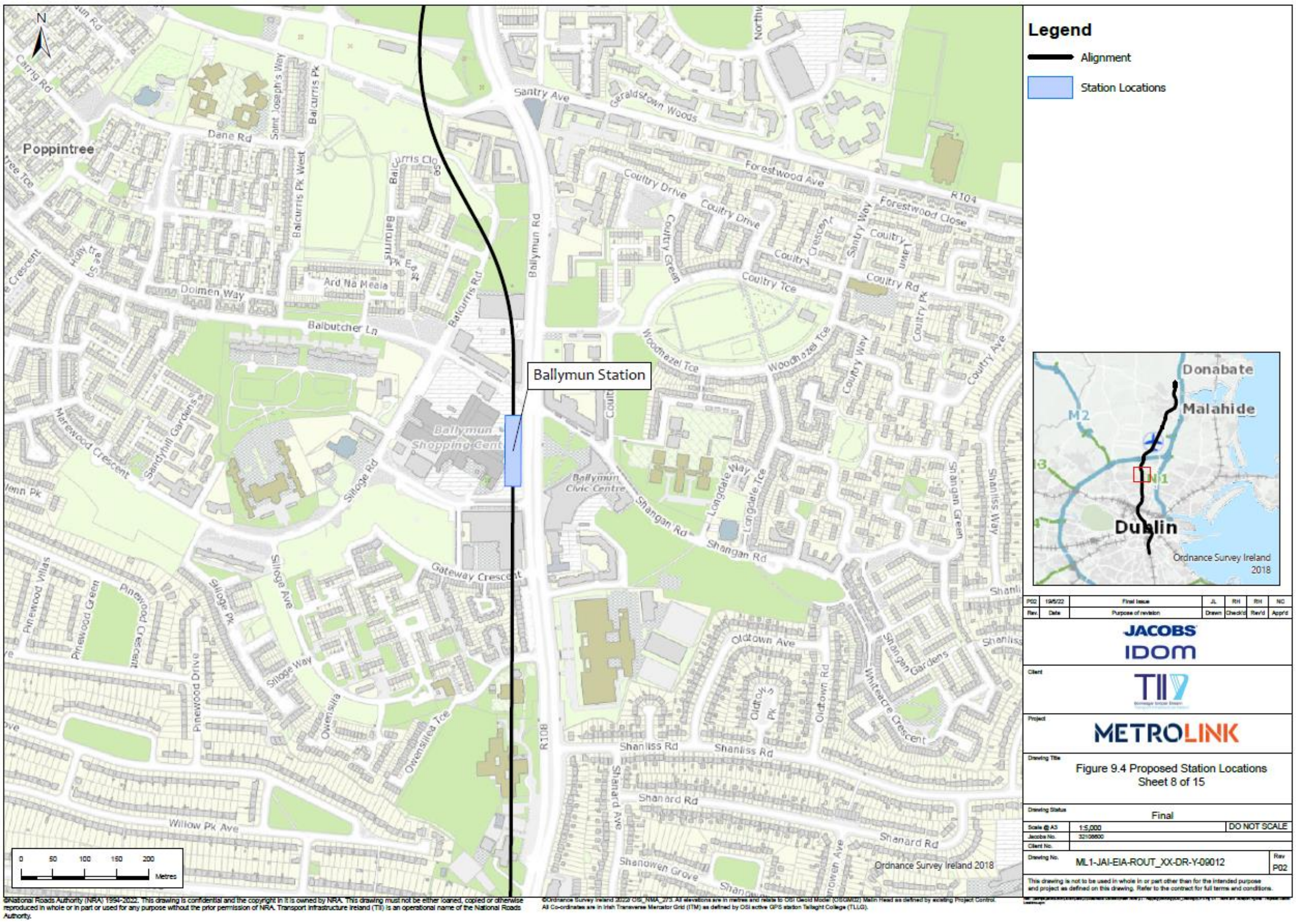
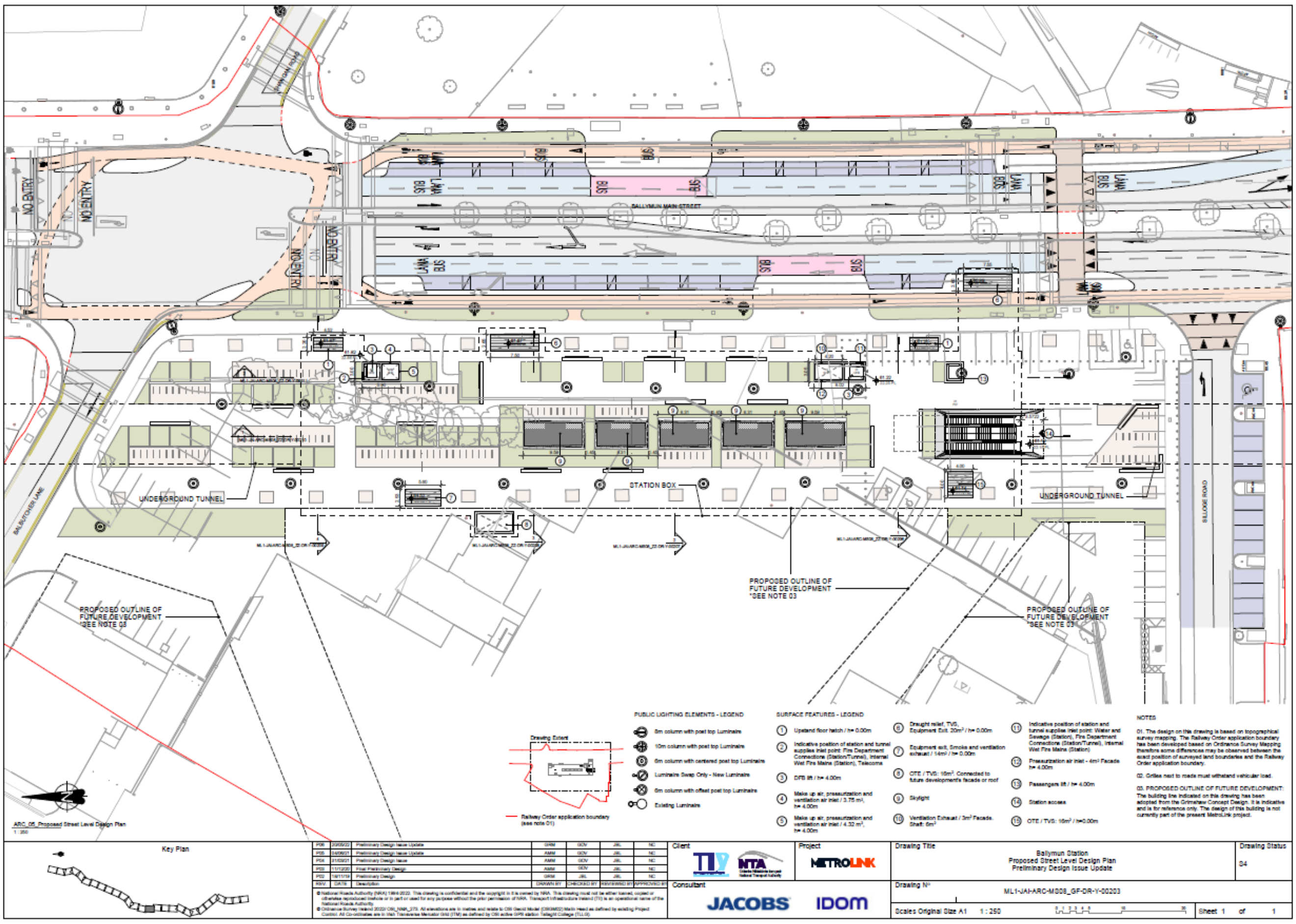


Figure 4.1: Proposed Site Location

Figure 4.2 illustrates the proposed layout for Ballymun Station including improvements to pedestrian crossings, location of entrances and exits, parking bays and bike parking area. The station platforms can be accessed via the existing footway provisions on R108 Ballymun Road and Shangan Road, with the stairs to the platform located in close proximity to the R108 Ballymun Road access. The existing bus stop on R108 Ballymun Road is located in close proximity to the proposed access, which provides a straightforward interchange opportunity.

Car parking spaces will be provided on both the eastern and western side of the R108 in the immediate vicinity of the proposed Ballymun Station, with a pedestrian crossing providing safe crossing to and from the station. Spaces and a drop-off area are also provided at the south of the station. A bus stop is also located on both the eastern and western side of the R108 at the proposed station, facilitating interchange with the wider public transport network.



4.1.1 Figure 4.2: Ballymun Station Layout

5. Trip Generation / Trip Attraction

5.1 Operational Phase

Traffic estimates associated with the Ballymun Station Operational Phase will be established by utilising the National Transport Authority's (NTA) East Regional Model (ERM). The ERM provides a comprehensive representation of multi-modal travel patterns across the Greater Dublin Area and is a suitable tool for the testing and appraisal of the proposed Project.

5.1.1 Passenger Boarding and Alighting

Passenger demand modelling has been used to predict the numbers of passengers boarding and alighting at each station, and the resulting passenger load on MetroLink, for the years 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). The scenarios considered for assessment for each of the years 2035, 2050 and 2065 are outlined in Table 5.1.

Table 5.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project.
Do Minimum Scenario	Committed transport schemes in the absence of the Project.
Do Something - Scenario A	Scenario with the Project and committed transport schemes only.
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for Opening year (2035) and planned schemes under the Transport Strategy for the GDA for the Design Year (2050) and the Forecast Year (2065).

5.1.1.1 Boarding and Alighting Volumes

Table 5.2 to Table 5.7 show boarding, alighting and interchange numbers for the Ballymun Station at different peak periods along with the destination and origins of passengers in the AM Peak. All data has been retrieved from the ERM developed by the NTA. Data in this section was obtained for the busiest hour within each of the following peak periods:

- AM: busiest hour between 07:00 – 10:00;
- LT (lunch time): busiest hour between 10:00 – 13:00;
- SR (school run): busiest hour between 13:00 – 16:00; and,
- PM: busiest hour between 16:00 – 19:00.

Figure 5.1 presents the volume of boarding and alighting passengers at Ballymun Station over the 12hr peak period (07:00-19:00) in both Scenario A and Scenario B. Scenario A is estimated to have approximately 13,600 boarding passengers and 13,200 alighting passengers in 2065; and Scenario B is expected to have approximately 11,700 boarding passengers and 10,600 alighting passengers in 2065.

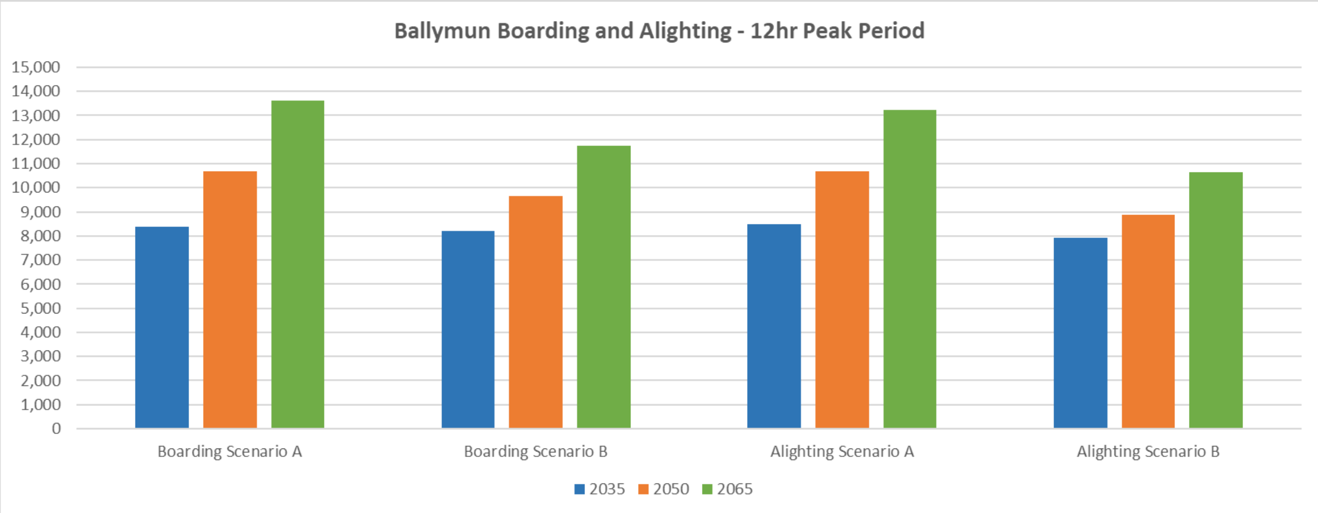


Figure 5.1: Ballymun 12hr Boarding and Alighting in Scenario A and Scenario B

5.1.1.2 Boarding and Alighting Volumes: Scenario A

Table 5.2 to Table 5.4 highlight the boarding and alighting passenger numbers for Ballymun Station in Scenario A.

Table 5.2 shows the boarding and alighting passenger numbers during the Opening Year, 2035. It is expected that the highest number of boarding passengers will be 1,885 in the southbound direction during the AM peak. The highest number of passengers alighting at the Ballymun Station will be 1,548 during the PM peak in the northbound direction.

Table 5.2: Boarding and Alighting Numbers at Ballymun Station in 2035, Scenario A

	AM			LT			SR			PM		
Direction	**Boarding**	**Alighting**	**Onward Flow**	**Boarding**	**Alighting**	**Onward Flow**	**Boarding**	**Alighting**	**Onward Flow**	**Boarding**	**Alighting**	**Onward Flow**
Northbound	237	481	4,445	115	278	2,996	84	471	3,590	126	1,548	5,847
Southbound	1,885	161	9,546	411	101	3,776	282	129	3,783	392	211	4,059

Source: East Regional Model (ERM)

For the year 2050, during the AM peak hour, 2,355 passengers are expected to board MetroLink vehicles at Ballymun Station and head south. During the PM peak hour, 459 passengers are expected to board and head south, while 1,913 northbound passengers are expected to alight.

Table 5.3: Boarding and Alighting Numbers at Ballymun Station in 2050, Scenario A

	AM	LT	SR	PM

Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	337	533	5,863	165	350	4,349	118	592	4,577	164	1,913	7,343
Southbound	2,355	199	11,446	535	157	5,682	353	196	5,079	459	298	5,279

Source: East Regional Model (ERM)

For the year 2065, during the AM peak hour, it is expected 2,894 passengers will board and travel south while 610 northbound passengers will alight. During the PM peak hour 565 southbound passengers will board while 2,326 northbound passengers will alight.

Table 5.4: Boarding and Alighting Numbers at Ballymun Station in 2065, Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	455	610	7,364	226	436	5,328	199	751	6,286	222	2,326	9,118
Southbound	2,894	248	13,614	693	207	6,545	448	255	6,379	565	404	6,762

Source: East Regional Model (ERM)

5.1.1.3 Boarding and Alighting Volumes: Scenario B

Table 5.5 to Table 5.7 highlight the boarding and alighting passenger numbers for Ballymun Station in Scenario B Likely Future.

For the year 2035, during the AM peak, 1,870 passengers are expected to board MetroLink vehicles and head south, with 473 northbound passengers alighting. During the PM peak hour, 407 southbound passengers are expected to board while 1,416 northbound passengers will alight.

Table 5.5: Boarding and Alighting Numbers at Ballymun Station in 2035, Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	214	473	4,506	105	266	3,093	74	462	3,770	109	1,416	5,401
Southbound	1,870	135	9,335	386	101	4,121	290	124	3,980	407	172	3,936

Source: East Regional Model (ERM)

Table 5.6 shows the boarding and alighting passenger numbers for the 2050 year. During the AM peak hour, it is expected 2,063 passengers will board MetroLink vehicles at Ballymun Station and head south while 400 northbound passengers will alight. During the PM peak hour, 1,511 northbound passengers are expected to alight at Ballymun Station while 432 southbound and 160 northbound passengers will board.

Table 5.6: Boarding and Alighting Numbers at Ballymun Station in 2050, Scenario B

	AM	LT	SR	PM

Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	305	400	6,229	183	300	4,882	123	488	4,903	160	1,511	7,221
Southbound	2,063	199	11,159	455	157	5,756	327	184	5,290	432	272	5,736

Source: East Regional Model (ERM)

Table 5.7 shows during the AM peak hour for the year 2065, 2,474 passengers are expected to board MetroLink vehicles and travel south. During the PM peak hour, 488 southbound passengers are expected to board, and 1,802 northbound passengers are expected to alight.

Table 5.7: Boarding and Alighting Numbers at Ballymun Station in 2065, Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	405	441	7,290	213	359	5,670	177	592	6,409	206	1,802	7,895
Southbound	2,474	248	13,992	566	191	6,837	387	231	6,382	488	338	6,220

Source: East Regional Model (ERM)

5.1.1.4 Public Transport Interchange Volumes

Ballymun Station is proposed along the R108 Ballymun Road, where it will interchange with proposed E1 and E2 Spine as part of the Bus Network Redesign proposals. More information on the future public transport network around the station can be found in Section 3.2 of this document.

The following tables present the volume of passengers interchanging to and from MetroLink vehicles with other public transport modes in Scenario A and Scenario B, in both the AM and PM peak hours. Most passengers are originating from, or have final destinations in, the surrounding zones. However, there are significant interchanges from the bus network in the AM peak hour, and to the bus network in the PM peak hour.

Table 5.8: Transfers To/From Other Public Transport Modes in Scenario A

Scenario A									
Year	Peak	Boarding				Alighting			
		First Boarding	From Bus	From Rail/DART	From Luas	Final Stop	To Bus	To Rail/DART	To Luas
2035	AM	1,482	640	-	-	377	265	-	-
	PM	358	160	-	-	1,063	695	-	-
2050	AM	1,975	717	-	-	448	285	-	-
	PM	460	163	-	-	1,420	791	-	-
2065	AM	2,526	824	-	-	539	319	-	-
	PM	585	202	-	-	1,806	923	-	-

Source: East Regional Model (ERM)

Table 5.9: Transfers To/From Other Public Transport Modes in Scenario B

Scenario B									
Year	Peak	Boarding				Alighting			
		First Boarding	From Bus	From Rail/DART	From Luas	Final Stop	To Bus	To Rail/DART	To Luas

2035	AM	1,455	629	-	-	372	236	-	-
	PM	369	147	-	-	1,045	544	-	-
2050	AM	1,860	508	-	-	435	164	-	-
	PM	464	129	-	-	1,306	477	-	-
2065	AM	2,287	592	-	-	515	174	-	-
	PM	574	119	-	-	1,626	514	-	-

Source: East Regional Model (ERM)

5.1.1.5 Distribution of Boarding and Alighting Passengers

Figure 5.2 shows the origins of passengers arriving to board at the station and Figure 5.3 the destination of passengers alighting at Ballymun Station during the AM peak. The width of the lines is proportional to the number of commuters leaving/arriving at the station.

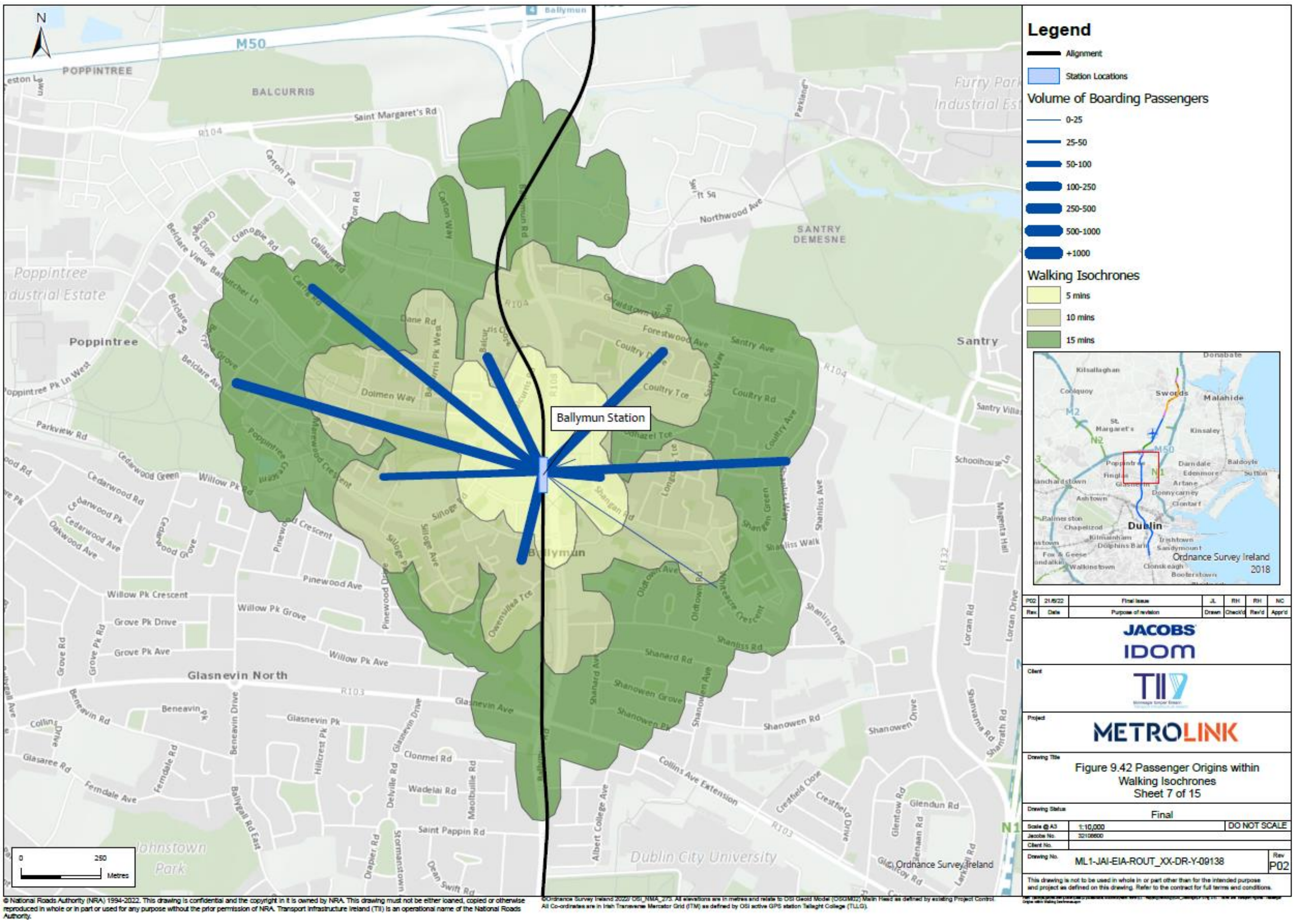


Figure 5.2: Origin of Boarding Passengers During AM peak hour and Walking Catchment Areas

The main origins of passengers in the AM peak are the residential lands immediately surrounding the station. The modelling indicates that passenger will come from walking distances of 15-20 mins to the west of the station and span as far as the Poppintree area. Passenger demand to the east is not indicated to span as far as the west but will include existing residential areas such as Coultry.

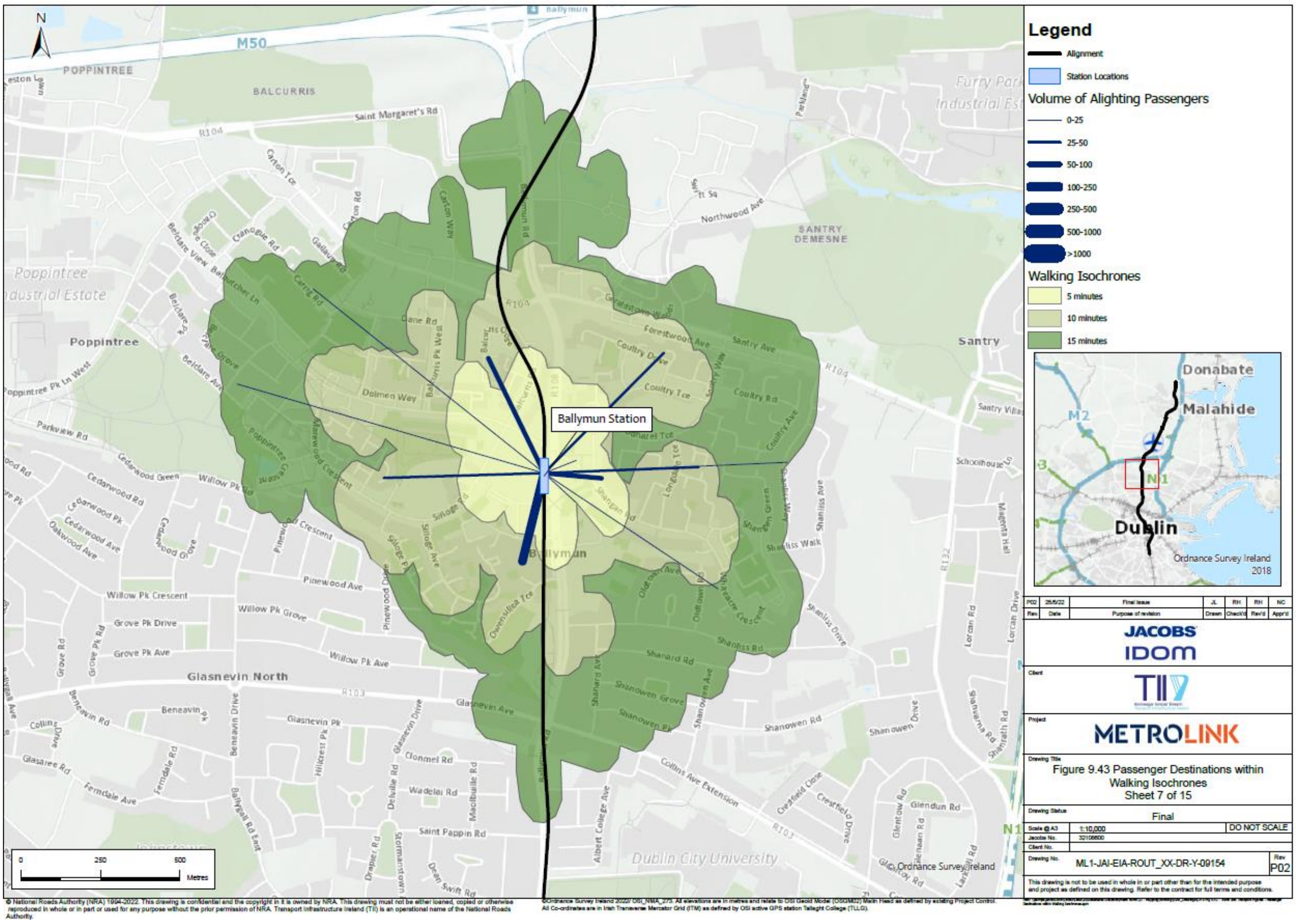


Figure 5.3: Destination for Alighting Passengers During AM peak hour and Walking Catchment Areas

The main destination for disembarking passengers in the AM peak is the commercial employment within Ballymun town centre but also extends to the IDA park and to the new Poppintree Park.

6. Assessment of Impacts

6.1 Operational Phase

As part of the assessment of impacts associated with the Operational Phase of the proposed Project, the impact of the proposed Ballymun Station will be examined on all modes of transport – public transport (PT), general traffic, walking and cycling.

6.1.1 Public Transport Impact Assessment

The National Transport Authority's (NTA) East Regional Model (ERM) has been interrogated to estimate the reduction in private car trips associated with the origin and destination trips in the zones around Ballymun Station. The modal split between public transport, active travel, and car users in Scenario A and Scenario B are shown in Figure 6.1 and Figure 6.2 respectively. These are based on trips made from zones within a 2km catchment of the station over a 12-hour period.

In Scenario A, PT mode share is estimated to increase by up to 5 percentage points (including MetroLink) compared to the Do Minimum, bringing potential PT mode share up to 27% in 2065. Car mode share is estimated to decrease by up to 1 percentage point compared to the Do Minimum, bringing it down to 37% by 2065. Active modes mode share, which includes walking and cycling, is estimated to decrease by up to 4 percentage points compared to the Do Minimum, to 36% by 2065. Overall, there will be an expected shift towards sustainable modes (PT and active modes), and a reduction in car mode share for trips made from zones around Ballymun Station.

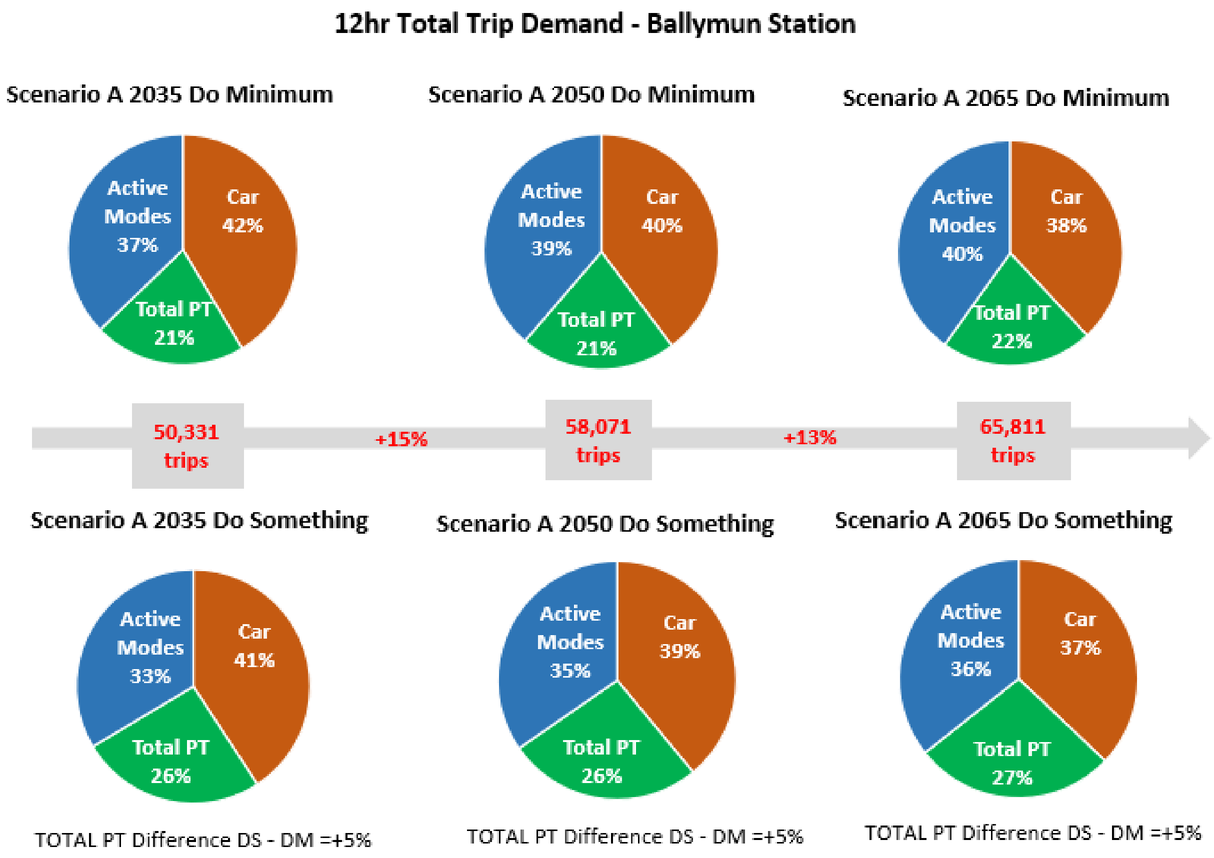


Figure 6.1: Mode Share of Trips from Zones around Ballymun Station - Scenario A

In Scenario B, PT mode share is estimated to increase by up to 4 percentage points (including MetroLink) compared to the Do Minimum, bringing potential PT mode share up to 27% in 2065. Car mode share is estimated to decrease by up to 1 percentage point compared to the Do Minimum, bringing it down to 37% by 2065. Active modes mode share, which includes walking and cycling, is estimated to decrease by up to 3 percentage points compared to the Do Minimum, bringing it down to 36% by 2065. Overall, there will be an expected shift towards sustainable modes (PT and active modes), and a reduction in car mode share for trips made from zones around Ballymun Station.

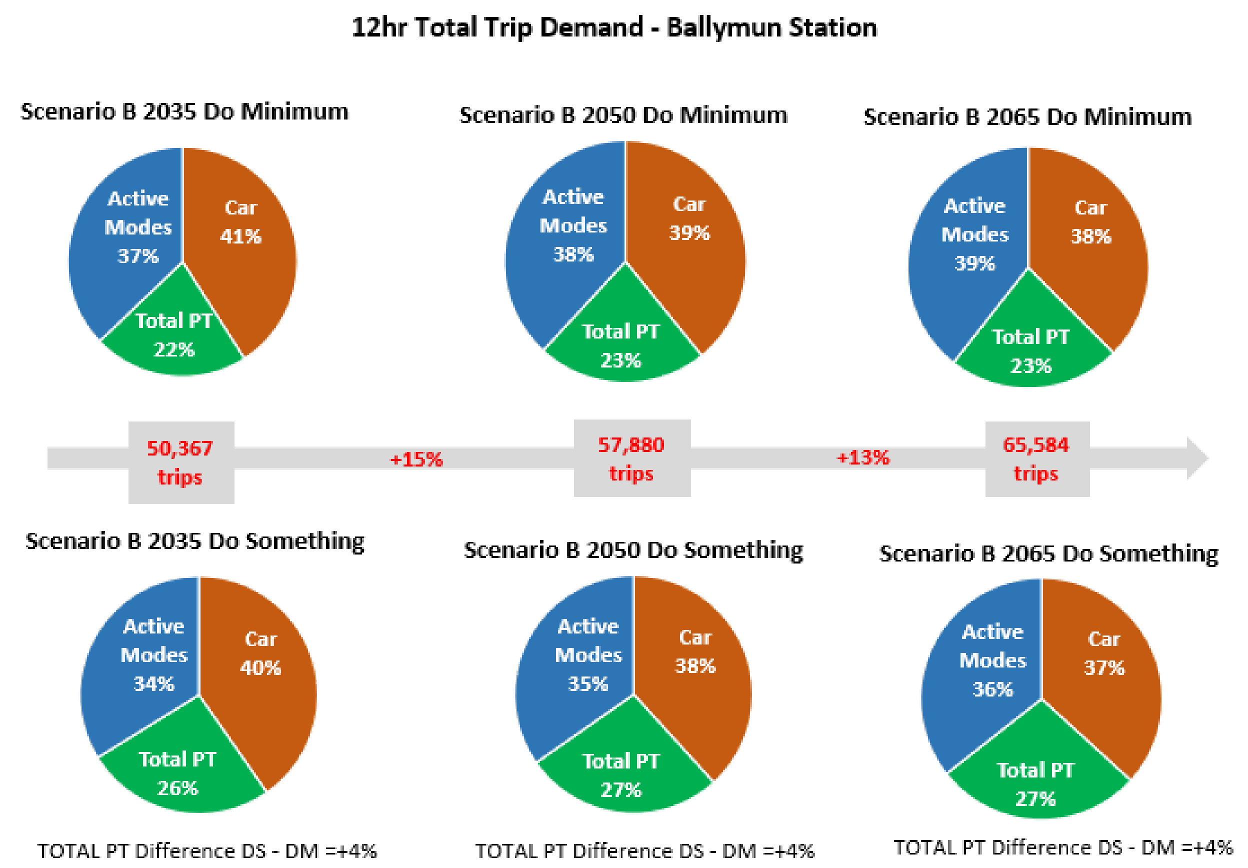


Figure 6.2: Mode Share of Trips from Zones around Ballymun Station - Scenario B

Figure 6.3 presents the changes in public transport mode share between the Do Minimum and Do Something scenarios in Scenario A 2065 AM Peak Hour, while Figure 6.4 presents the same for Scenario B 2065 AM Peak Hour.

In the AM peak hour of 2035, 2050, and 2065, for both Scenario A and Scenario B, the zones around Ballymun Station see an increase in PT mode share (including MetroLink), with estimated increase of 5-10 percentage points in zones immediately surrounding Ballymun Station, and estimated increase of 1-5 percentage points in zones slightly afield.

In the PM peak hour of 2035 and 2050, and 2065, for both Scenario A and Scenario B, nearly all zones around Ballymun Station see an increase in PT mode share (including MetroLink), with estimated increase of 5-10 percentage points in zones immediately surrounding Ballymun Station, and estimated increase of 1-5 percentage points in zones slightly afield. In the PM peak hour of 2065, for Scenario A, the zone immediately north of Ballymun Station sees an estimated increase of 10-20 percentage points.

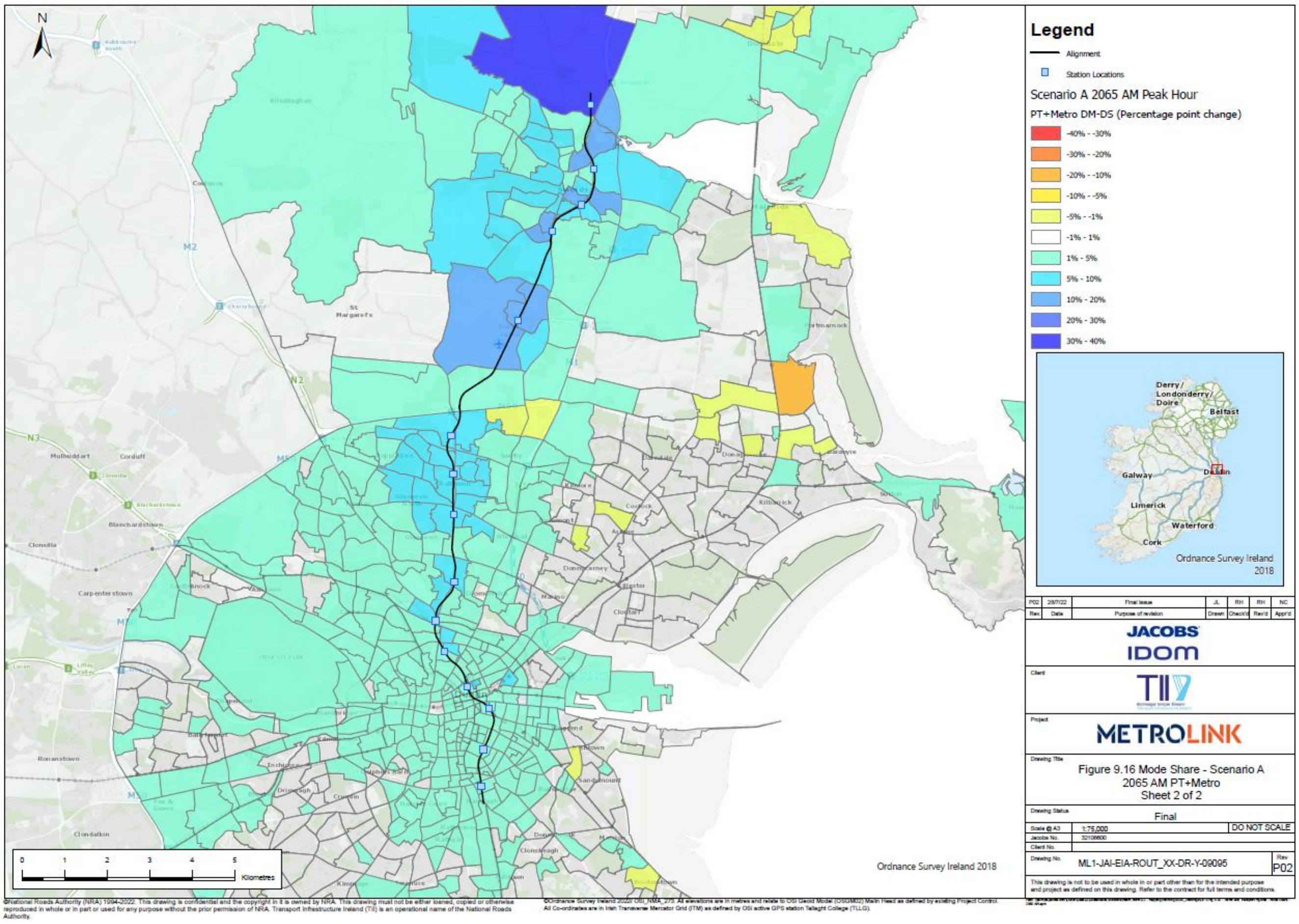


Figure 6.3: Changes in Public Transport Mode Share (including the Project) in Scenario A 2065 AM Peak Hour

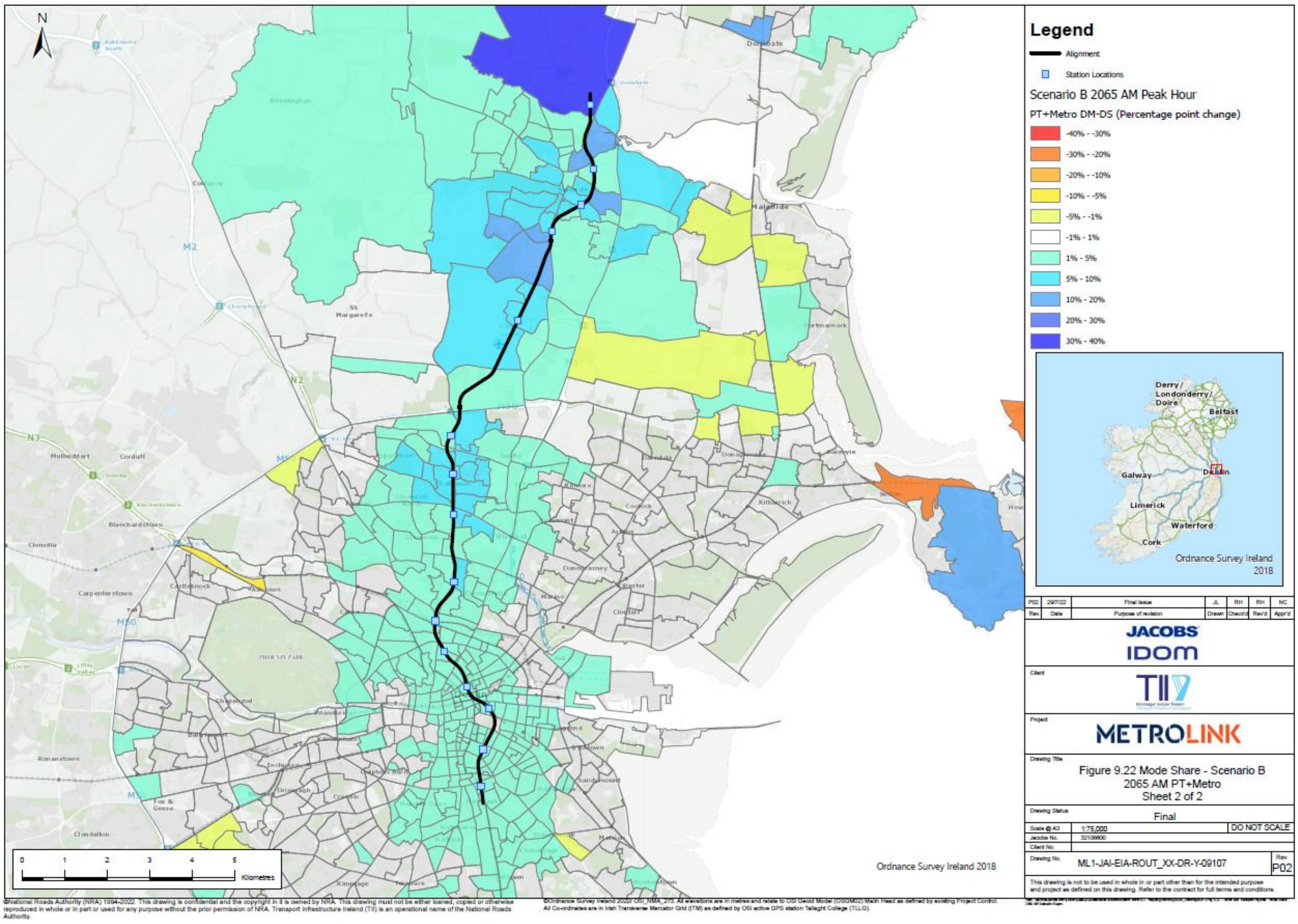


Figure 6.4: Changes in Public Transport Mode Share (including the Project) in Scenario B 2065 AM Peak Hour

In Scenario A the following changes to journey times are observed:

- In the 2035, 2050 and 2065 AM period, public transport journeys from Ballymun area to locations such as Rathgar Road area, Sandyford area, and Swords Pavilion area will see time savings of approximately 20 minutes when the proposed Project is in place.
- Public transport journeys from Ballymun area to key Dublin City Centre locations such as O'Connell Street, St. Stephen's Green and Trinity College will see savings of between 10 and 17 minutes in the 2035, 2050 and 2065 AM period.
- Public transport journeys from Ballymun to areas in north Dublin, such as Swords East, will see savings of approximately 19 minutes in the 2035, 2050 and 2065 AM period; and to Dublin Airport, savings of approximately 12 minutes in the 2035, 2050 and 2065 AM period.

In Scenario B the following changes to journey times are observed:

- In the 2035, 2050 and 2065 AM period, public transport journeys from Ballymun to locations such as Sandyford area, Swords Pavilion area, and Swords East area see time savings of approximately 17 minutes when the proposed Project is in place.
- Public transport journeys from Ballymun to key Dublin City Centre locations such as O'Connell Street, St. Stephen's Green and Trinity College also see savings of between 7 and 14 minutes 2035, 2050 and 2065 AM period.

- Public transport journeys from Ballymun to areas in north Dublin, such as Balbriggan see savings of approximately 17 minutes in the 2035 AM period, increasing to a saving of approximately 19 minutes in the 2065 AM period; and to Dublin Airport, savings of approximately 10 minutes in the 2035, 2050 and 2065 AM period.

6.1.2 Traffic Impact Assessment

The future street level layout provides for car parking spaces along both sides of the R108 to the east of the station, and additional taxi pick-ups. The existing road layout on the R108 will be reduced to one lane in both directions for vehicular traffic as part of the Bus Connects Core Bus Corridor proposals, to accommodate a designated bus lane and cycling infrastructure in the vicinity of the station.

Figure 6.5 presents the changes in road mode share per zone in Scenario A 2065 AM Peak hour, while Figure 6.6 presents the same for Scenario B 2065.

In the 2035 AM period, zones to both the east and west of the station see a reduction of 1-5 percentage points in private car mode share. In the 2050 and 2065 AM periods, the zones that also see these reductions in private car mode share of 1-5 percentage points extend further beyond the alignment, such as along the R135 to the west of the Ballymun Station.

Over the 12hr period, the zones within a 2km radius of Ballymun Station see a reduction of over 70 car trips between the Scenario A 2035 Do Minimum and Do Something scenarios, reaching a reduction of over 140 trips in Scenario A 2050. In 2065, there is a reduction of 270 car trips between the Do Minimum and Do Something scenarios. In Scenario B, these zones see a reduction of over 90 car trips between the 2035 Do Minimum and Do Something scenarios, increasing to a reduction of 280 car trips in 2050. 2065 sees a reduction of 215 car trips between the Do Minimum and Do Something scenarios.

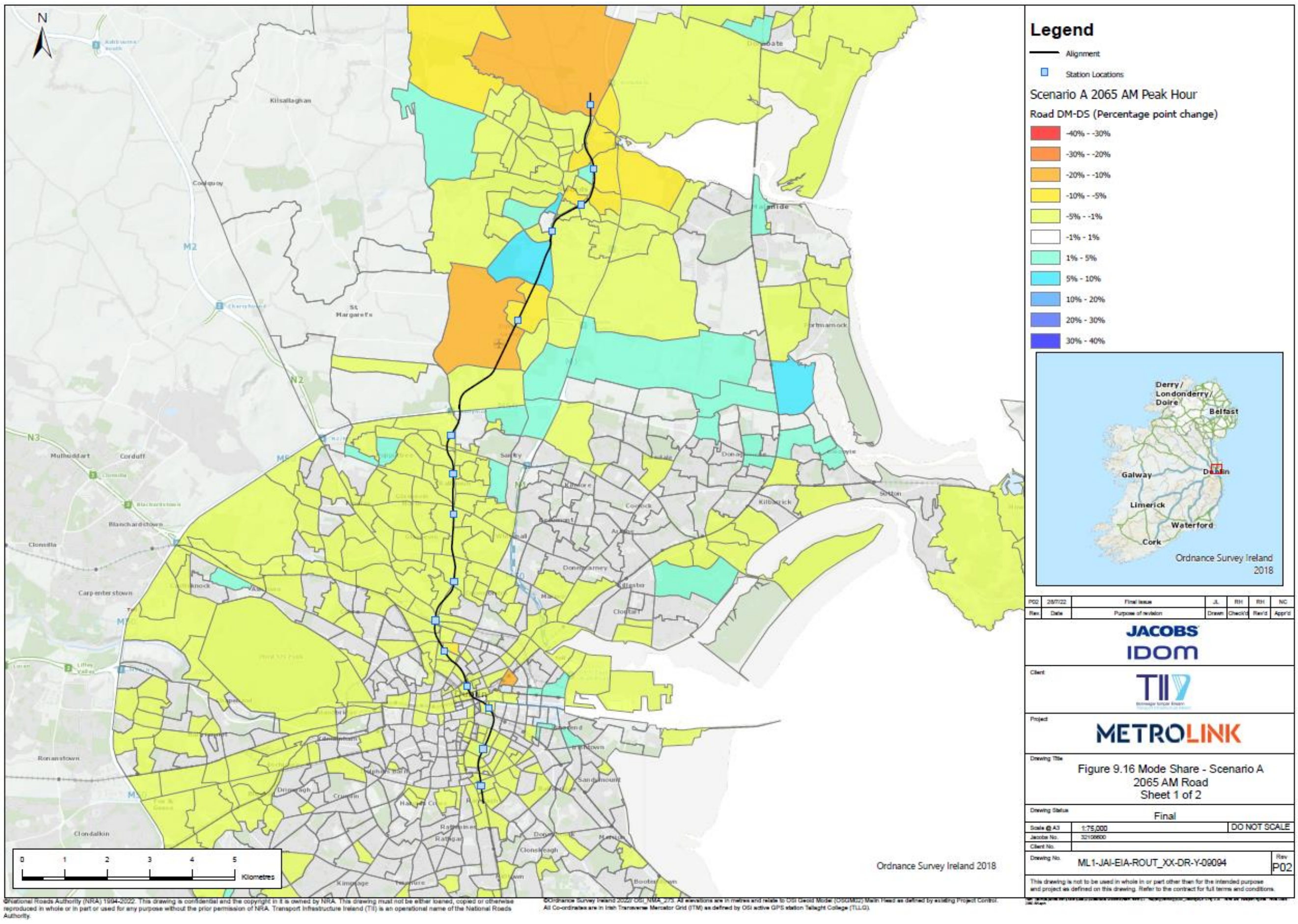


Figure 6.5: Changes in Car Mode Share in Scenario A 2065 AM Peak Hour

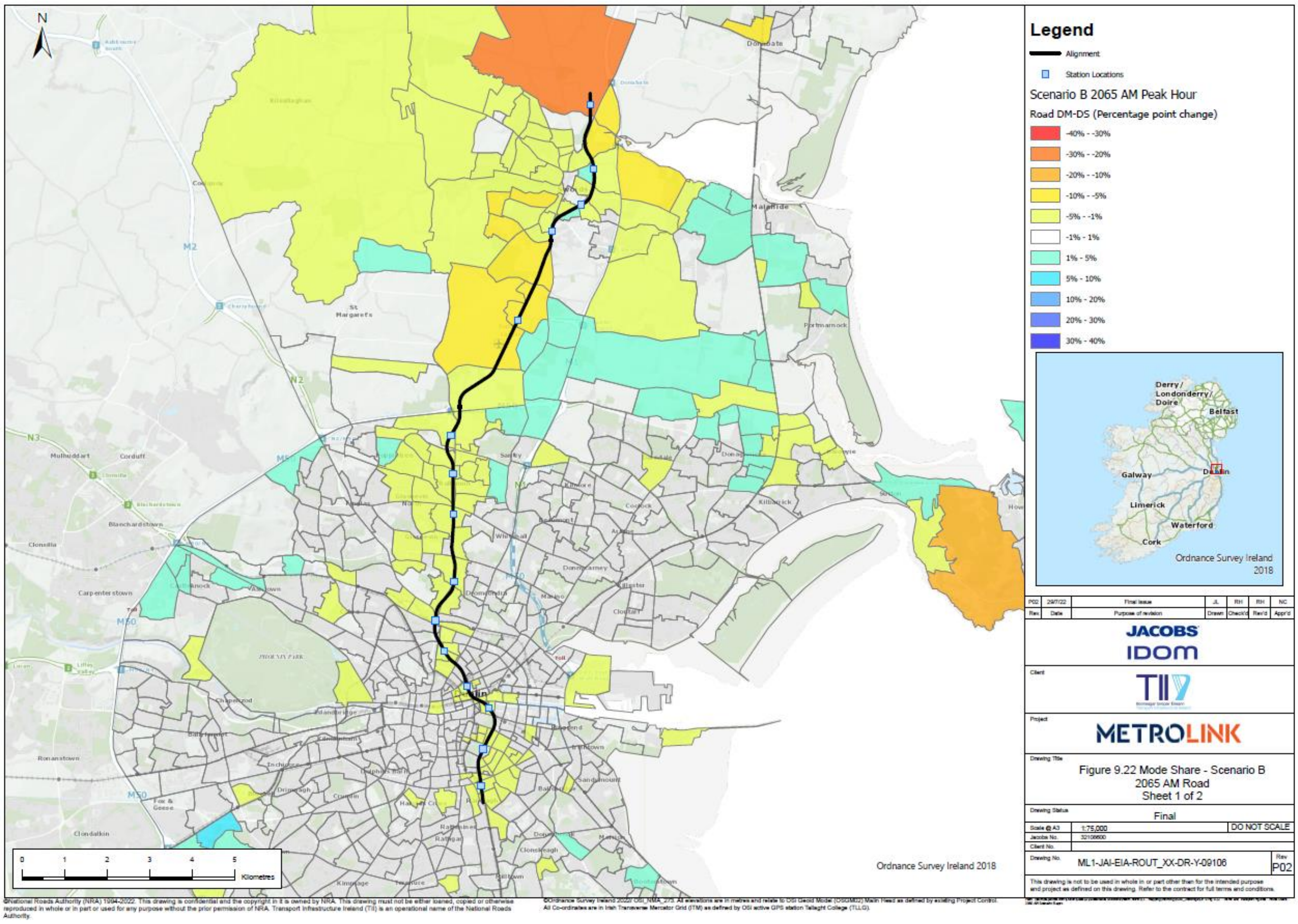


Figure 6.6: Changes in Car Mode Share in Scenario B 2065 AM Peak Hour

6.1.3 Pedestrian Impact Assessment

A pedestrian comfort assessment has been undertaken to assess the impact of the proposed Project on the comfort of the footway provisions following the increased volumes of pedestrians on the network in the design years. The Scenario A 2050 design year was assessed, with Scenario A 2065 also assessed as the 'worst-case scenario' for passenger numbers, as this scenario has the highest volume of total AM passenger demand in the future year between both Scenario A and Scenario B (almost 61,000 AM boarding passengers across the alignment in Scenario A, compared to almost 55,000 AM boarding passengers in Scenario B). At all stations, the passenger demand in the AM peak hour is lower in Scenario B than in Scenario A, with the exception of Fosterstown Station where there is a 12% increase in Scenario B. As such, Scenario B has not been assessed, with the exception of Fosterstown Station to ensure that all possible significant impacts are accounted for.

The assessment results show that while Shangan Road (West), would have road section with footway widths below DCC guidance, however the Pedestrian Comfort Level is deemed 'Acceptable'. In the baseline scenario, this link was deemed 'Comfortable', and therefore the implementation of the proposed Project results in a negative impact to pedestrians on this link. All other links remain 'Comfortable' in the design year.

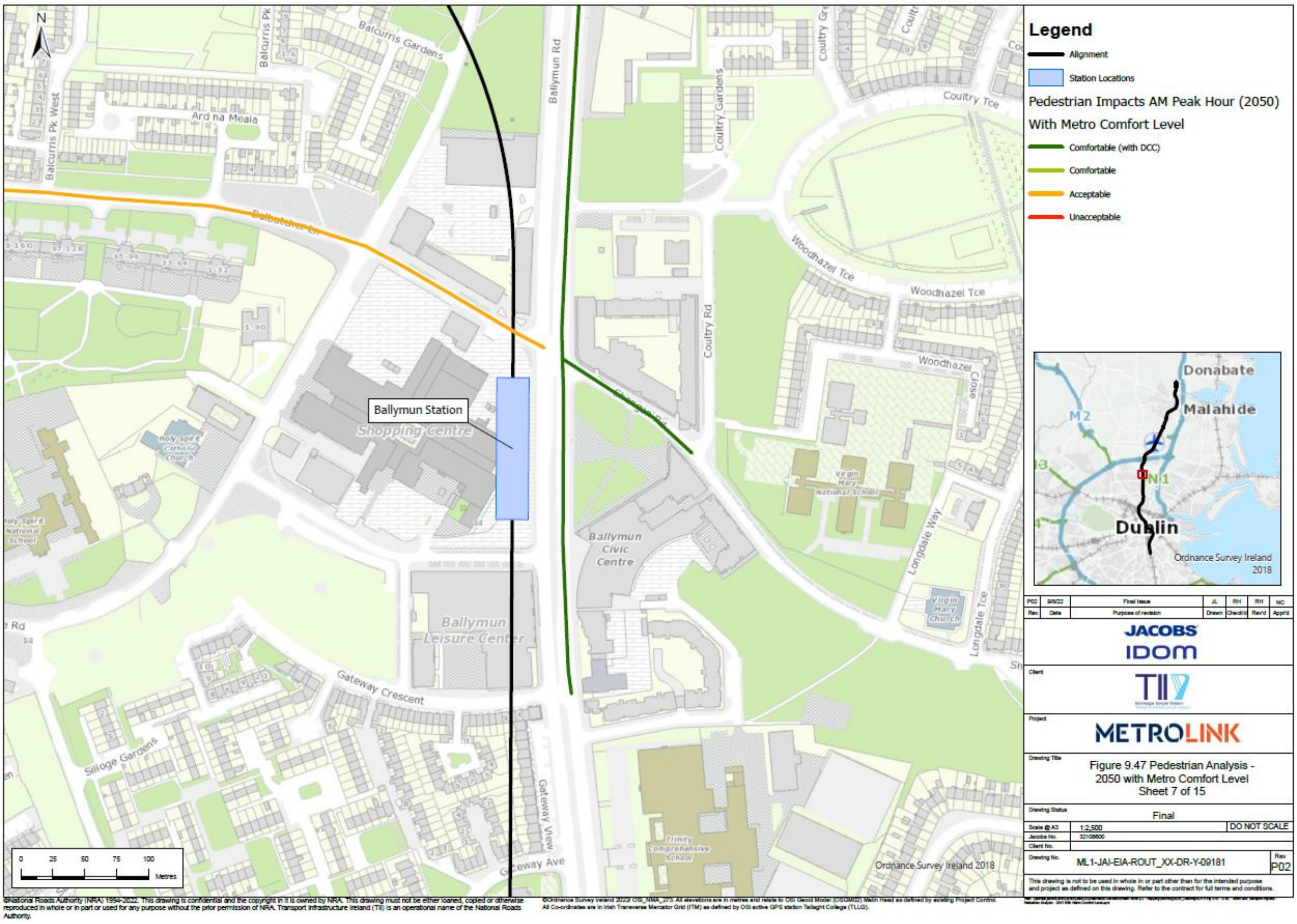


Figure 6.7: Pedestrian Comfort Assessment – With the Project 2050 Scenario A

There is no change in comfort level from 2050 to 2065, indicating that the footway provisions are sufficient to accommodate the increased demand in future years.

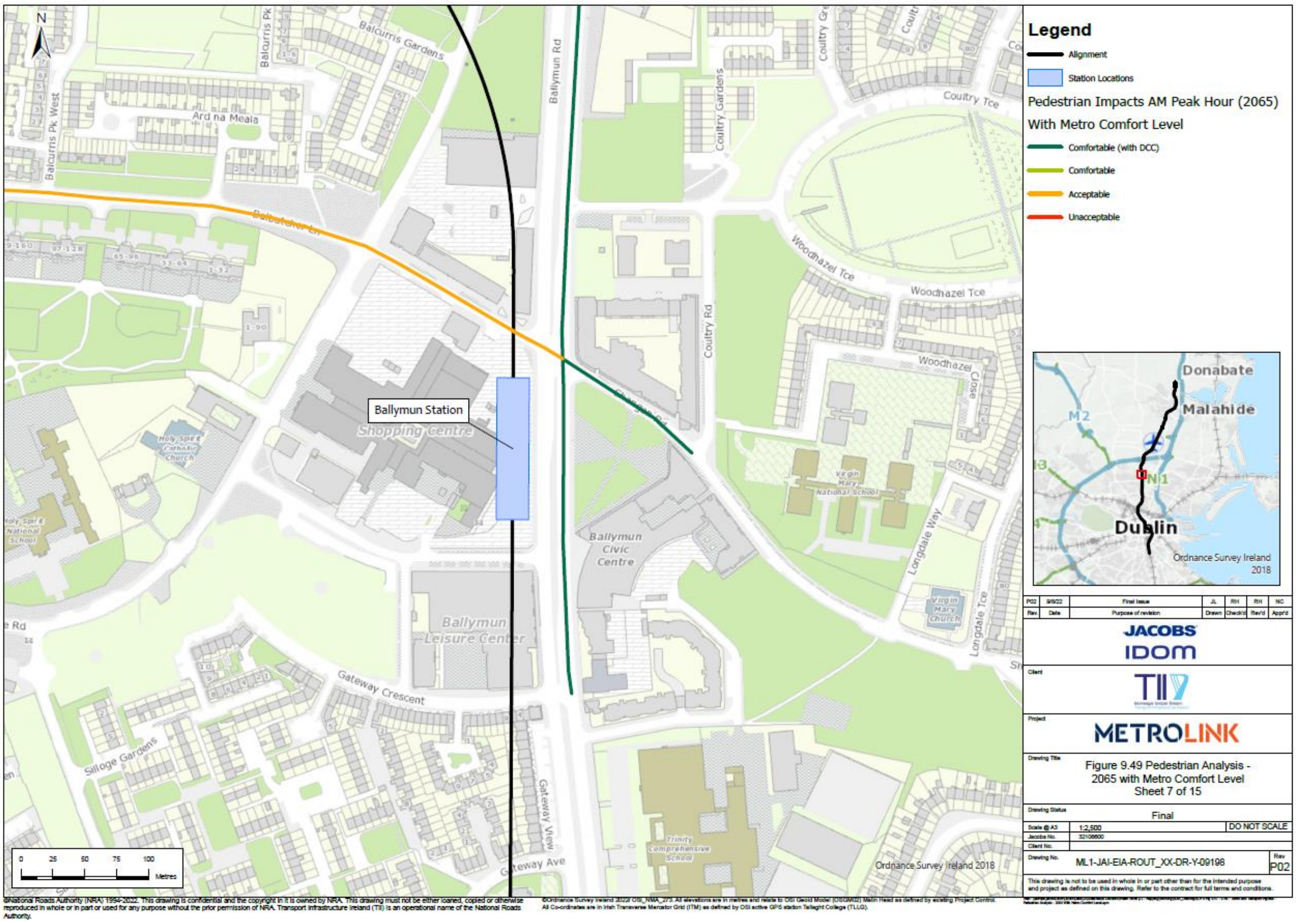


Figure 6.8: Pedestrian Comfort Assessment – With the Project 2065 Scenario A

6.1.3.1 Pedestrian Crossing Assessment

The pedestrian crossing along the R108 in the vicinity of the proposed Ballymun Station will be provided as part of the Bus Network Redesign proposals, however this has been assessed to ensure suitability for the proposed Project demand at this location.

Figure 6.9 shows the number of Project passengers entering and exiting Ballymun Station per 5 minutes within the 2065 AM peak hour.

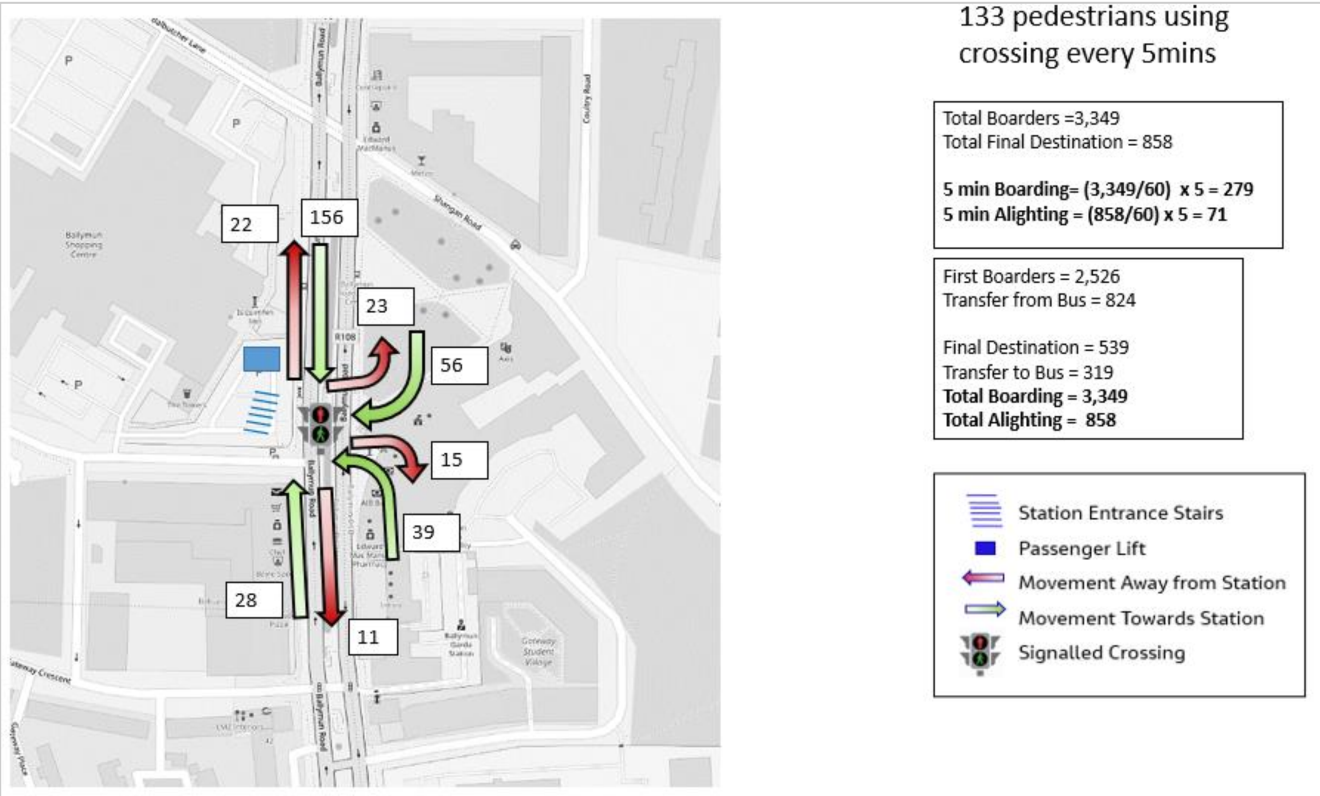


Figure 6.9: Pedestrian Demand at Crossing on Ballymun Road, adjacent to Station

The straight arrows indicate the number of people who use the station-side footpath to enter and exit the station, whereas the curved arrows indicate the number of people who are on the footpath on the eastern side of Ballymun Road, and therefore use the pedestrian crossing adjacent to the station access to enter and exit the station. Therefore, Figure 6.9 indicates that out of a total 350 passengers entering and exiting the station every 5 minutes during the AM peak hour, 133 of these passengers will be using the pedestrian crossing.

As such, the sufficiency of the pedestrian crossing on Ballymun Road to accommodate this volume of passengers, for a 60 second has been assessed in Table 6.1. This has been assessed using the TfL's crossing assessment tool within the TfL's Pedestrian Comfort Guidance document.

Table 6.1: Pedestrian Crossing Assessment at Ballymun Station

Pedestrian Level of Comfort (PCL) (Crossing Arm)	PCL for Average Flows	C+: 19 ppmm
	PCL for Peak Hour Flows	C-: 24 ppmm
Impact	Pedestrian Level of Comfort (PCL) (Crossing Arm) at Peak Hour Flows	There is not enough space for people to use the crossing arm comfortably. This could be improved by adjusting the signal times, increasing the width of the crossing or a combination of these two measures.
Pedestrian Level of Comfort (PCL) (Space for people to pass	PCL for Average Flows	B-: 15 ppmm
	PCL for Peak Hour Flows	C+: 19 ppmm
Impact	Pedestrian Level of Comfort (Space for people to pass on Island) at Peak Hour Flows	There is not enough space for people to pass one another comfortably. This could be improved by adjusting the signal times, increasing the width of the crossing or a combination of these two measures. The design of the crossing should also be reconsidered - A straight across crossing may work better in this situation.
Pedestrian Level of Comfort (PCL) (Space for people to queue on	PCL for Average Flows	E:5 row(s)
	PCL for Peak Flows	E:7 row(s)
Impact	Pedestrian Level of Comfort (PCL) (Space for people to queue on Island) at Peak Hour Flows	This level of queuing may encourage unsafe behaviour. The crossing could be improved by adjusting the signal times, increasing the width of the crossing or a combination of these two measures. The design of the crossing should also be reconsidered - A straight across crossing may work better in this situation.

The number of passengers using the pedestrian crossing per hour was calculated to give 1,526 passengers. The pedestrian crossing has been assessed as a ‘Straight Across Crossing’ as defined by the Transport for London Pedestrian Comfort Guidance for London Guidance Document, with the crossing arm measuring 4m in width, and the depth of the space on the island measuring 5m. SCATS data has been used to identify the signal timings of the junction.

The sufficiency of the pedestrian crossing on Ballymun Road to accommodate this volume of passengers, for a 60 second signal timing scenario has been tested.

When the signal timing is 60 seconds, the space for people to queue remains at an ‘uncomfortable’ level, exceeding the recommended maximum 4 rows of crowding during the Average Flow, however the comfort level on the crossing arm and for the space for people to pass is at an ‘Acceptable’ level.

Furthermore, the operational performance of the pedestrian crossing on the R108 Ballymun Road, for an opening year base scenario, has been analysed using LINSIG 3. These results are presented in terms of degree of saturation and associated vehicle queues. Table 6.2 presents the results for a 60 second cycle time.

The pedestrian crossing has been assessed as a stand-alone and not linked to the operational performance of the R108 Ballymun Road / Shangan Road Signalised Junction.

Table 6.2: LinSig Model Result Summary_2035 With the Project - R108 Ballymun Road / Toucan Crossing south of Shangan Road Junction

Arm	Lane	2035 With the Project – AM Peak		2035 With the Project – PM Peak	
		Degree of Saturation [%]	Mean Max Queue [PCU]	Degree of Saturation [%]	Mean Max Queue [PCU]
R108 Ballymun Road Northbound	Ahead (Bus Lane)	2.1	0.2	2.1	0.2
	Ahead	50.3	6.6	74.8	16.4
R108 Ballymun Road Southbound	Ahead (Bus Lane)	1.9	0.0	2.0	0.0
	Ahead	35.4	0.3	37.5	0.3
Cycle Time (seconds)		**60 seconds**		**60 seconds**	

The anticipated pedestrian crossing length circa 12 metres, with an intergreen time of approximately 10 seconds is required following the pedestrian green phase. The model incorporates 'Walk Time' of 8 seconds and an intergreen time of 12 seconds, therefore pedestrians / cyclists would be allocated 20 seconds on each cycle for each crossing.

The pedestrian crossing is predicted to operate to an acceptable level for a 60 second cycle. Furthermore, the predicted performance of the pedestrian crossing, coupled with the predicted performance of the R108 Ballymun Road / Shangan Road Signalised Junction, is such that the pedestrian crossing is expected to operate to an acceptable level, in relation to the adjacent junction, and is predicted to have no detrimental impact on the operation of the road network.

6.1.4 Cycling Impact Assessment

The future street level layout at Ballymun Station provides for a one-way cycle lane on both sides of the R108 within the Red Line Boundary. These improvements in the cycle infrastructure will result in the Quality of Service improving from Level B in the Baseline scenario, to Level A in the Operational Phase.

A methodology has been applied to determine the potential demand for cycle parking at each of the stations. This methodology utilises the number of boarding and alighting passengers, the distance of origin/destinations from the station, and the location of the station. The passenger demand from an earlier Opening Year has been utilised to determine the potential cycle demand in the Opening Year, and in the Opening Year +5 Years.

This approach has informed the design and the number of cycle parking spaces provided at each station. Other factors such as the availability of land, potential future land uses, and parking supply and the location of the station have also been taken into consideration by the design team in determining the quantum of cycle parking spaces provided.

For the Ballymun Station, a total of 292 cycle spaces are proposed. An enhanced crossing of the R108 will provide improved cycle access to the station.

6.1.5 Road Safety

A Stage 1 Road Safety Audit has been undertaken for all of the proposed highway works for the Project. This is under a separate cover.

7. Summary

In Scenario A, Ballymun Station will facilitate approximately 16,800 passenger movements over the 12hr peak period (07:00-19:00) in 2035, rising to over 21,300 in 2050 and 26,800 in 2065. In Scenario B, Ballymun Station will facilitate approximately 16,100 passenger movements over the 12hr peak period (07:00-19:00) in 2035, rising to over 18,500 in 2050 and 22,300 in 2065.

The main catchment origins and destinations of the people boarding and alighting at the Ballymun Station will be

- Origins from Coultry residential area;
- Origins from Poppintree residential area;
- Destinations at the commercial employment in Ballymun town centre; and,
- Destinations at Poppintree Park.

The proposed Project will result in increases in public transport mode share of 5-10 percentage points in zones immediately surrounding Ballymun Station, and estimated increase of 1-5 percentage points in zones slightly afield, in both Scenario A and Scenario B. By 2065 in Scenario B, the zone immediately north of the station will see in increase in public transport mode share of 10-20 percentage points during the PM peak hour.

The proposed Project will result in improvements to the public transport journey times for people in the area, such as a saving of approximately 20 minutes for journeys from Ballymun to Sandyford in the AM period. For journeys from Ballymun to Dublin City Centre locations such as O'Connell Street and St. Stephen's Green, there will be savings of between 10 and 17 minutes, and for journeys from Ballymun to Swords East savings of approximately 19 minutes.

The station will also provide for 292 cycle parking spaces. The pedestrian comfort assessment indicates that Shangan Road West will have an 'Acceptable' comfort level, with all other links being deemed 'Comfortable'. The comfort level remains unchanged between 2050 and 2065, indicating that the footway provisions will be sufficient to accommodate the anticipated demand. A signalised pedestrian crossing is proposed as part of the Bus Network Redesign proposals. The assessment of the impact of this pedestrian crossing on pedestrians accessing the Ballymun Station shows that with a cycle time of 60 seconds, the Pedestrian Comfort Level is 'Acceptable'.

In overall terms, Ballymun Station will provide for improvements to the public transport network resulting in decreased private car usage/trips and increased public transport usage, and will facilitate walking and cycling to the station, without significantly impacting on the operation of the road network in the area.

Appendix A. Traffic Flow Diagrams

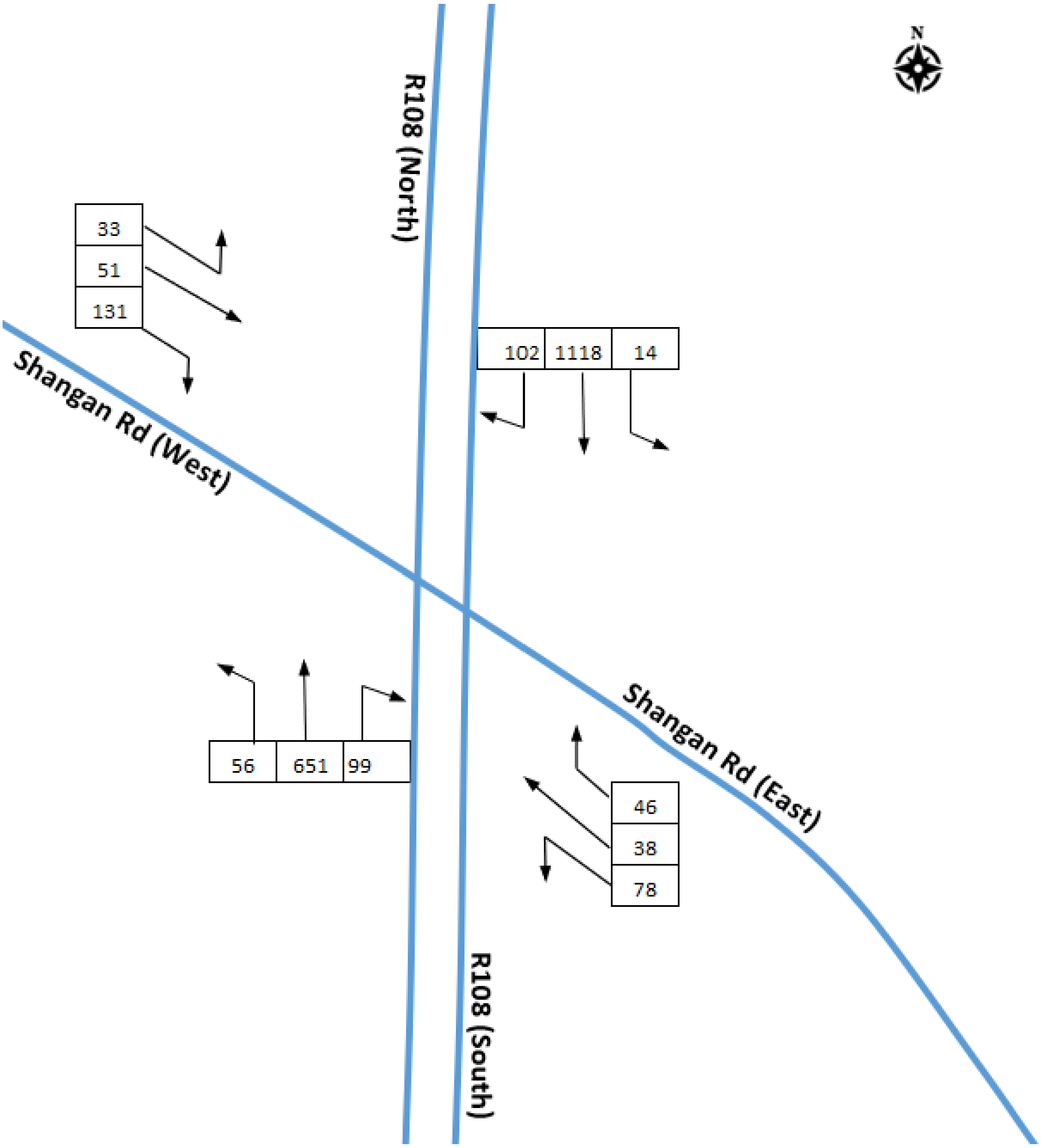


Figure 7.1: AM 2018 Baseline Flows

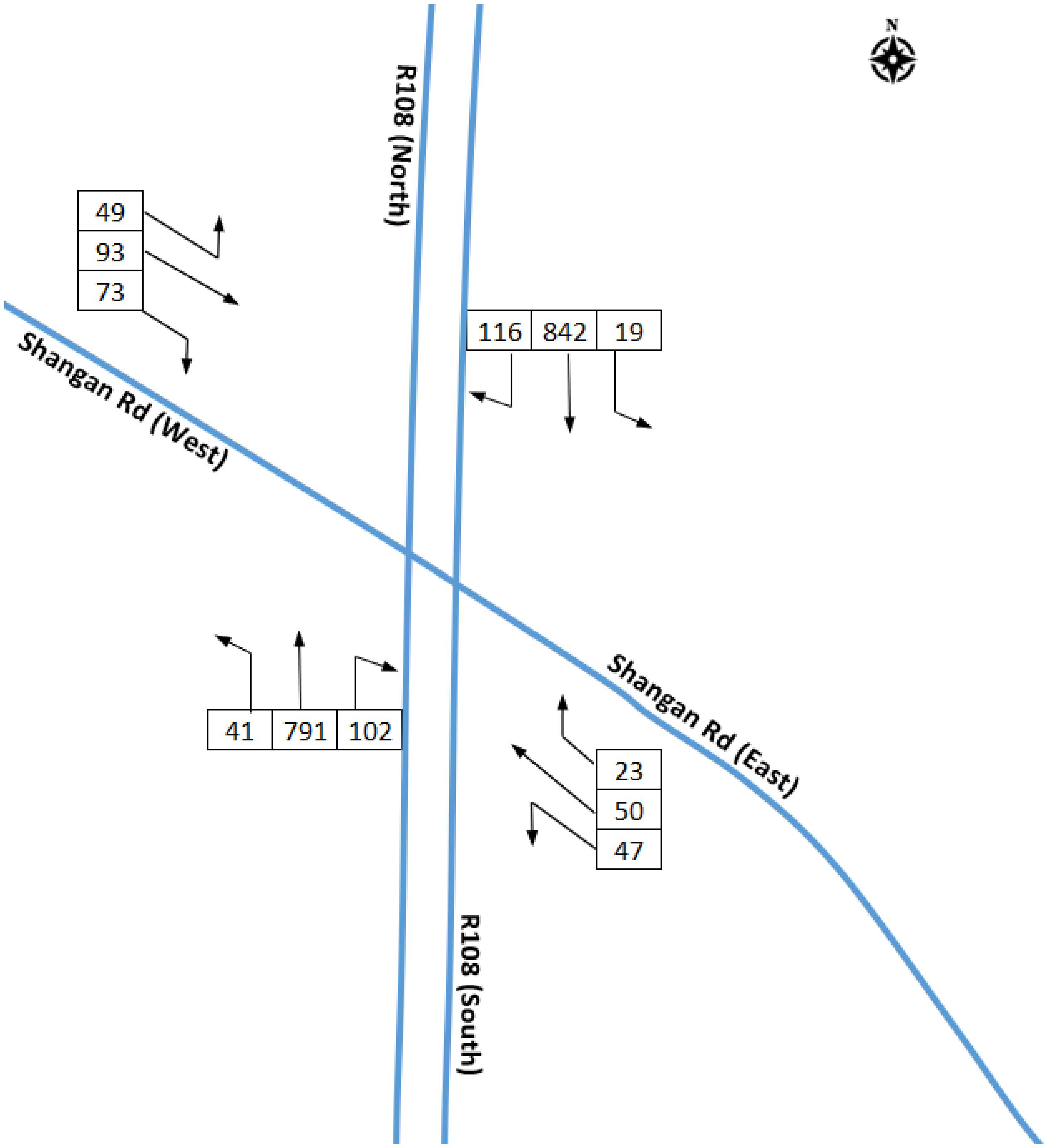


Figure 7.2: PM 2018 Baseline Flows

Contents

1. Introduction

1.1 Background

Jacobs/IDOM has been commissioned to undertake the Environmental Impact Assessment Report (EIAR) in support of the proposed Dublin MetroLink project (hereafter referred to as the Project). The EIAR is being prepared to assess the environmental impacts of the Project, including in relation to traffic and transport.

This Traffic and Transportation Assessment (TTA) assesses the operational impacts associated with the Collins Avenue station on the Traffic and Transport network in the local area. TTA's have been prepared for each individual station as well as an overall TTA for the Project.

Jacobs/IDOM has also been commissioned to undertake a scheme traffic management plan (STMP). The STMP is a standalone report within the EIAR. The STMP assesses the impact of the construction of the Project on all road users and proposes mitigation measures where appropriate.

A summary of the TTAs and STMP will be included within the Traffic and Transportation chapter of the EIAR.

1.2 Assessment Scenarios

In order to provide a rounded assessment of the Project, its impacts have been reviewed for a range of future years, and in the context of two alternative future scenarios. The forecast years are 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). As outlined in Table 1.1, Scenario A includes the proposed Project and committed transport schemes only, while Scenario B includes a range of further planned schemes depending on the forecast year.

Table 1.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project
Do Minimum Scenario	Committed transport schemes in the absence of the Project
Do Something - Scenario A	Scenario with the Project and committed transport schemes only.
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for delivery by 2030 for Opening year (2030) and planned schemes under the Transport Strategy for the GDA for the Design Year (2045) and the Forecast Year (2060)

Committed transport schemes in the Do Minimum scenario and in Scenario A, that have been progressed through planning and are either under construction or are programmed into the capital expenditure budget, include, but are not limited to:

- Luas Green Line Capacity Enhancement- Phase 1;
- BusConnects Dublin Network Redesign; and,
- Bus Connects Fares and Ticketing.

Scenario B represents the likely future receiving environment and is based on the delivery of the schemes identified within the National Development Plan for 2035, and on the implementation of the NTA's Greater Dublin Area (GDA) Transport Strategy for 2050 and 2065. As such, this scenario considers the cumulative impacts of interactions between other projects that are most likely to impact on transport movements in the area. Schemes included in this scenario are, but are not limited to:

- Luas Green Line Capacity Enhancement- Phase 2;
- Luas Finglas;
- Luas Lucan;
- BusConnects Core Bus Corridors (planned 16 corridors); and
- DART+.

More information on each modelled scenario is available in the Transport Modelling Plan (Appendix A9.3).

1.3 Project Overview

The Project will be a high-capacity, high frequency rail line running from Swords to Charlemont, linking Dublin Airport, Irish Rail, the Dublin Area Rapid Transit (DART), Dublin Bus and Luas services, improving integration across public transport network in the Greater Dublin Area (GDA).

As well as linking major transport hubs, the proposed Project will connect key destinations including Swords, Ballymun, the Mater Hospital, the Rotunda, Dublin City University and Trinity College.

When operations commence, there will be trains every 3 minutes during peak periods. This can rise to a service every 90 seconds, with the system capable of carrying a peak line flow of 20,000 passengers per hour in each direction.

1.3.1 Collins Avenue Station

The proposed Collins Avenue Station will be located slightly overlapping and adjacent to the R108 Ballymun Road south of the intersection with the R103 and immediately in front of Our Lady of Victories Church, underlying the part of the road, pavement and amenity area and main pedestrian entrance to the Church. The surrounding area is characterised by residential housing. Our Lady of Victories infants school is located on the west side of the R108, almost opposite the entrance to the new station while the Dublin City University is located to the south east of the church. There is an existing lights-controlled crossing over the R108 near the Our Lady of Victories infants school.

Pedestrian access to the underground station will be through a main entrance stair and two passenger lifts located at the north of the station. The pedestrian crossing at the north-west of the station will be realigned and upgraded with ramps, tactile paving, new signals. A cycle lane will also be provided on both sides of the R108, with 370 bicycle parking spaces provided to the east of the station along Albert College Court.

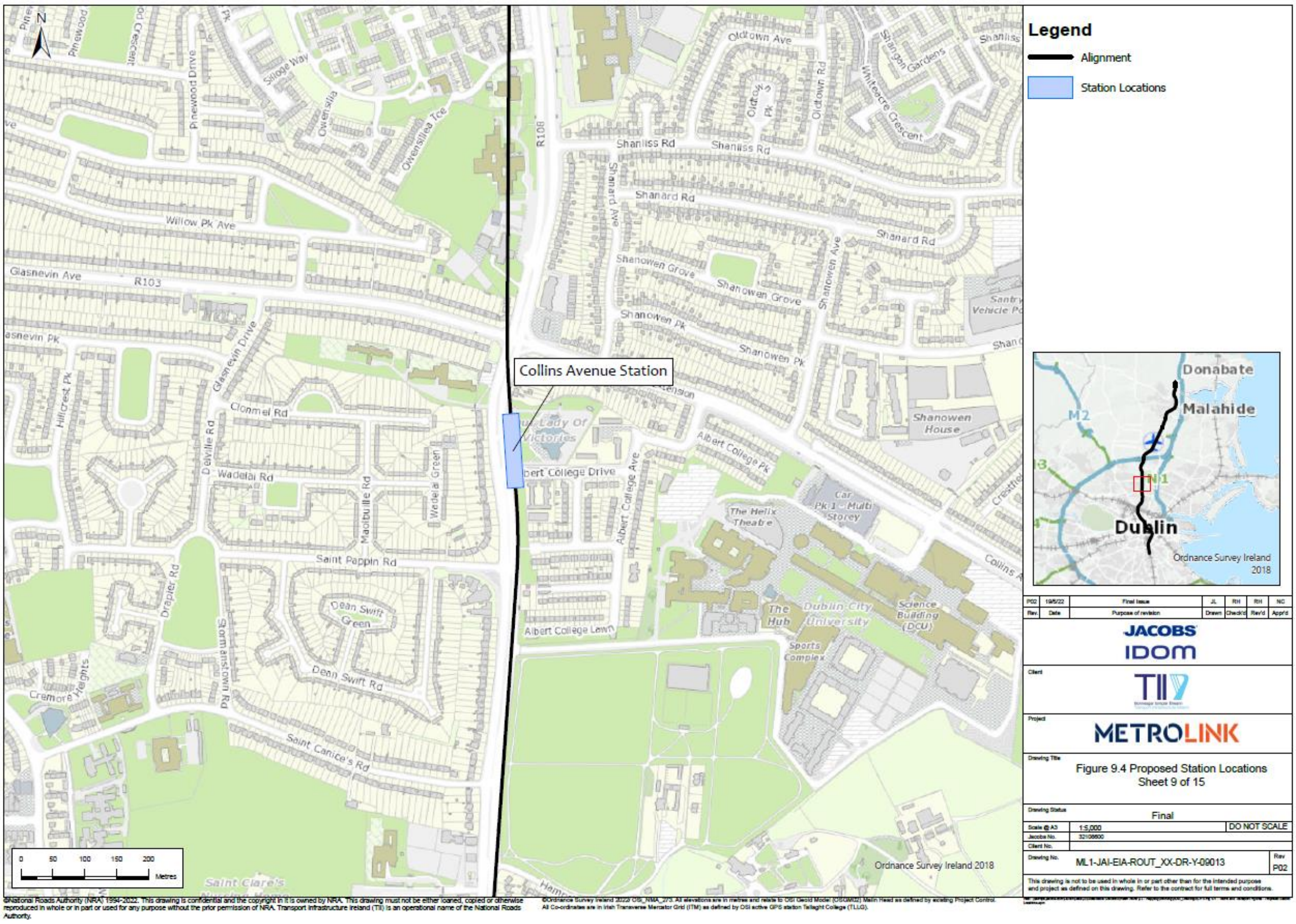


Figure 1.1: Collins Avenue Station Location

2. Policy Context

Reference should be made to the Chapter 3 of the Overall Project TTA, and Planning Policy Report (ML1-JAI-PLD-ROUT_XX-RP-Y-00020) for further detail on the overall project in relation to key national and regional policies.

The station does not lie in lands that are subject to a LAP or Masterplan.

3. Baseline Conditions

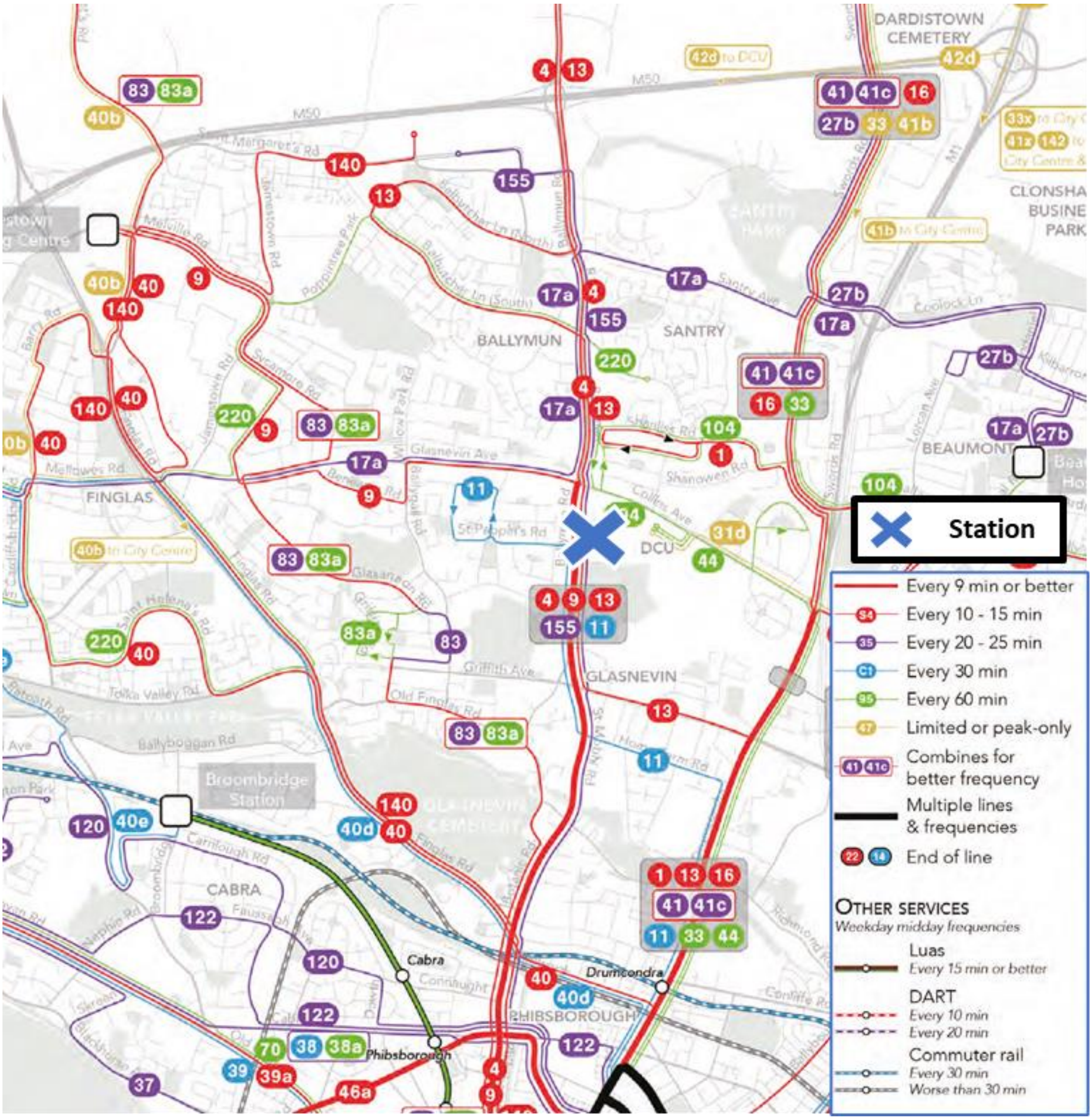
This section describes the existing receiving environment within the vicinity of the Collins Avenue Station and the wider environs, and identifies the future receiving environment for all modes of transport if conditions are planned to change in advance of the construction of the Project, such as the delivery of other proposed infrastructure projects.

3.1 Existing Public Transport

Figure 3.1 shows the existing bus services in the surrounding area. The area surrounding Collins Avenue Station is served by a number of bus services with a frequency of approximately every 15 mins, which utilise the bus stops located in close proximity to the station. Within a 600m buffer from Collins Avenue Station there are more than 22 bus stops located along R108, R103 and Saint Pappin Road (see Figure 3.2).

The bus stop directly south of Collins Avenue Station is served by routes 4 (Monkstown Avenue to Harristown); 9 (Charlestown to Limekiln Avenue); 11 (Wadelai Park to Sandyford Business District); 13 (Grange Castle to Harristown); and 155 (Ikea towards Bray Rail Station). Other relevant bus routes with stops within this buffer include route 17A (Blanchardstown to Kilbarrack); and 104 (Clontarf to DCU).

The bus stops and bus services detailed previously are existing services which are currently being reviewed by the NTA as part of the Bus Network Redesign.



(Base Source: www.busconnects.ie)

Figure 3.1: Existing bus network around Collins Avenue

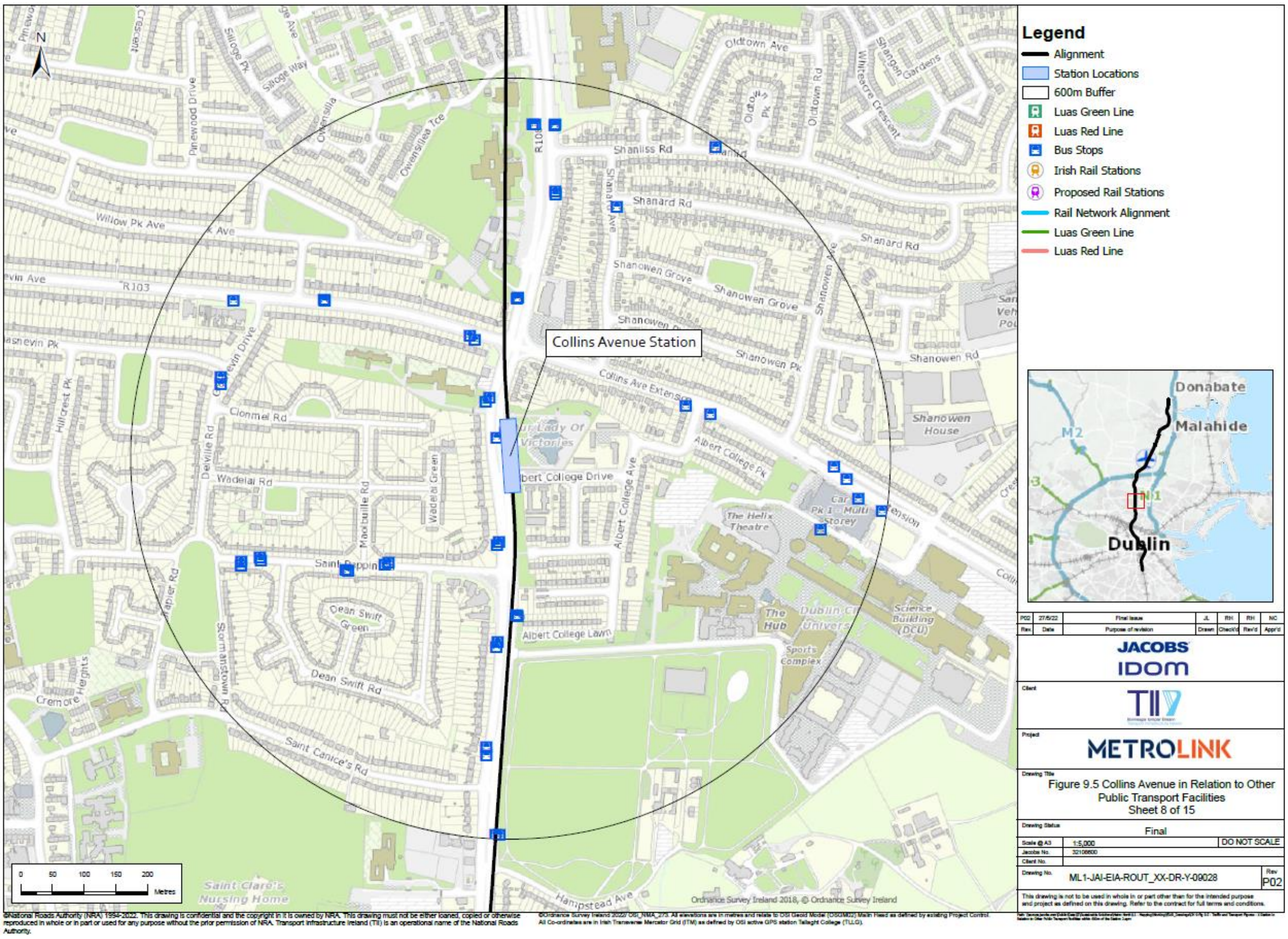
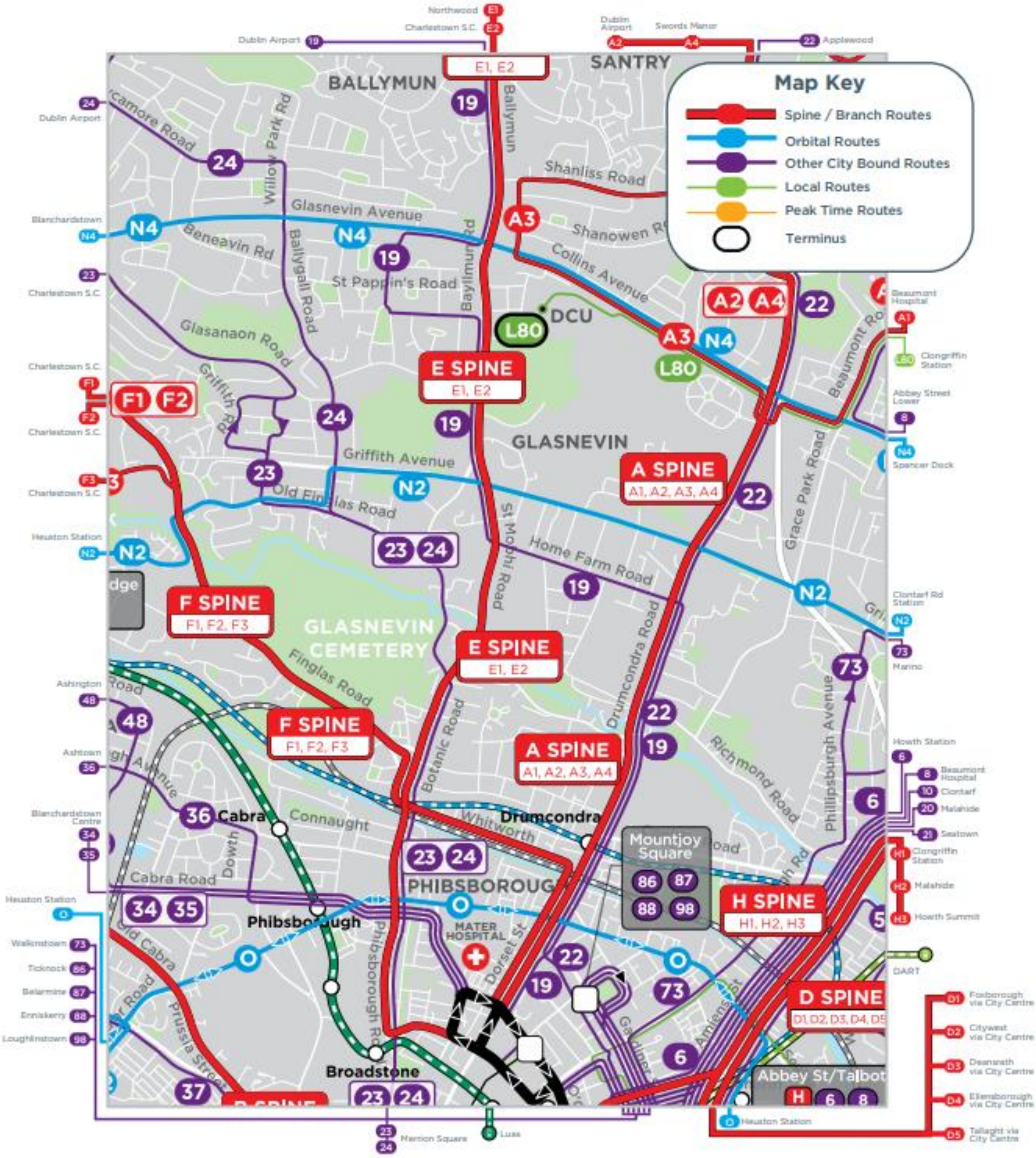


Figure 3.2: Transport facilities within 600m buffer

3.2 Future Receiving Environment – Public Transport Network

The Collins Avenue Station is also located along the proposed E1 and E2 Spine as part of the Bus Network Redesign proposals, shown in Figure 3.3 and is in close proximity to Orbital routes N4, serving Blanchardstown to Killester and Dublin City Centre. Routes E1 and E2 will have frequencies of 8 to 10min on weekdays giving the Spine E a combine frequency of 5min during weekdays. The N4 orbital route will have a frequency of 10-15 minutes. There is also another ‘city bound route’, the 19, which also runs past the proposed Collins Avenue Station with a frequency of one bus every hour every day.



(Base Source: www.busconnects.ie)

Figure 3.3: Proposed Bus Network Redesign around Collins Avenue Station

3.3 Existing Road Network

Collins Avenue Station is situated south of the R108 and R103 intersection (see Figure 3.4), both of which are key roads providing links between the station and Dublin City University. Most of the immediate road network consists of smaller roads with cul-de-sacs that serve large residential areas. The station is approximately 2km from the M50 Junction 4 and 5km from the M1.

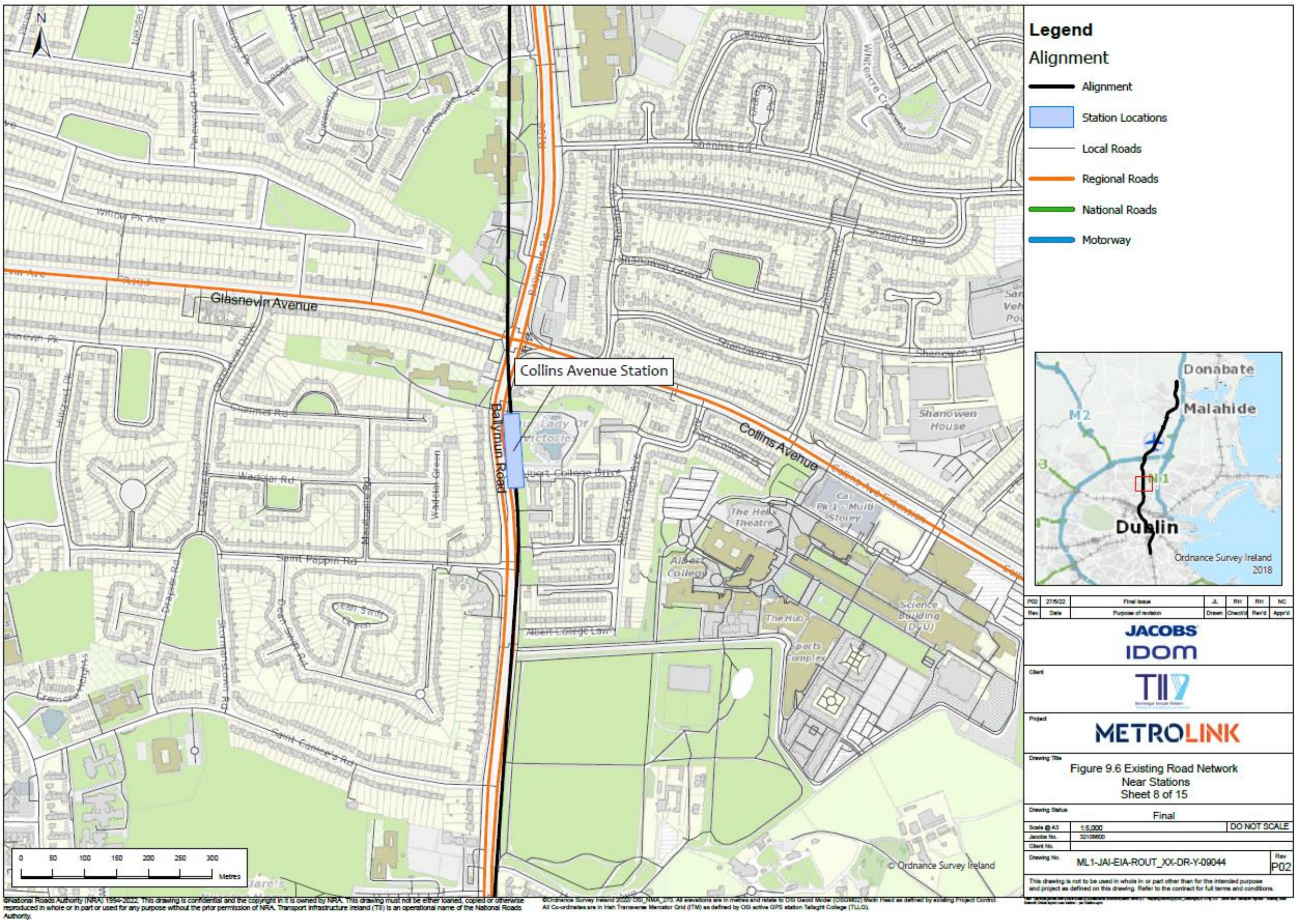


Figure 3.4: Street layout near Collins Avenue Station

The R108 (Ballymun Road) is a two-way dual carriageway and is part of the regional road network of the GDA. In its most proximate section to the proposed Collins Avenue Station, the R108 has a width of approximately 23m and comprises two traffic lanes, a bus lane and a cycle lane on each direction. The cycle lane is often interrupted by on-street parking. The R108 is a radial route providing links from the M50 in the north and Usher's Quay in Dublin City Centre via Glasnevin and Phibsborough.

The R103 (Collins Avenue) is a two-way single carriageway with one traffic lane on each direction with no bus lanes. An advisory cycle lane is provided westbound that ends at the junction with the R108, north of the proposed station. R103 varies in width and can go from 6m to 14m as it approaches to the junction.

3.3.1 Junction Turning Counts

The Data Collection Report (ML1-JAI-TRA-ROUT_XX-RP-Y-00023) details the methodology and specification of traffic surveys undertaken for the proposed Project. The survey locations relevant to Collins Avenue Station are shown in Table 3.1. Vehicle classifications used for the survey were Car, LGV, OGV1, OGV2, PSV, Motorcycle and Pedal Cycle. PCUs values were also reported using appropriate conversion factors for each vehicle classification. The resulting PCU values from the survey results have been used for the LinSig modelling.

Demand flows were obtained from the turning counts and queue data from either observation from online traffic flow data sources or queue count surveys. Demand data has been used in all the assessment work undertaken.

Table 3.1: Survey Locations Around Collins Avenue Station

Junction	Type of Survey
R108 Ballymun Road / Glasnevin Avenue / Collins Avenue Extension Signalised Junction	Classified Junction Turning Count (CJTC)

3.3.2 Base Traffic Flows

The 2018 base traffic flows for the AM and PM peak periods, for the junctions detailed in Table 3.1, are provided within Appendix A Traffic Flow Diagrams.

Table 3.2 below summarises the 2018 AM and PM Peak results for the R108 Ballymun Road / Glasnevin Avenue / Collins Avenue Extension Signalised Junction.

Table 3.2 : LinSig Model Result Summary_2018 Base Traffic Flows– Ballymun Road / Collins Avenue Extension / Glasnevin Avenue

Arm	Lane	AM Peak		PM Peak	
		Degree of Saturation (%)	Mean Maximum Queue [PCUs]	Degree of Saturation (%)	Mean Maximum Queue [PCUs]
R108 Southbound	Left / Ahead	67.1%	3.6	57.5%	2.3
	Ahead	85.6%	18.1	83.9%	16.1
	Ahead / Right	88.8%	21.0	83.2%	10.3
Collins Avenue Extension	Left	45.8%	3.9	31.8%	2.5
	Right / Ahead	88.9%	10.8	87.8%	11.2
R108 Northbound	Ahead / Left	60.8%	9.6	85.1%	17.4
	Right / Ahead	64.0%	9.3	85.7%	17.1
Glasnevin Road	Left / Right	84.0%	10.4	90.6%	13.4
PRC (%)		**1.3%**		**-0.6%**	
Total Delay (pcuHr)		**48.44**		**51.73**	

The analysis indicates that this junction operates within capacity during the base scenarios, with the exception of the Glasnevin Road arm which is predicted to operate slightly over capacity during the PM peak period. Notwithstanding this, the predicted levels of queueing and delay are considered reasonable during all assessed scenarios.

3.3.3 Forecast Traffic Growth

Forecast traffic growth rates have been obtained from the Eastern Regional Model (ERM) for future years 2035, 2050 and 2065 for the appropriate scenario.

3.4 Future Receiving Environment – Road Network

As part of the Bus Connects Core Bus Corridor proposals in the vicinity of Collins Avenue Station, the R108 northbound will be reduced to one traffic lane and one bus lane, to facilitate the provision of designated parking and drop -off spaces at Our Lady of Victories Boys National School. As part of the public realm proposals for Collins Avenue, the car-parking spaces will be replaced with bicycle parking associated with the station.

3.5 Existing Pedestrian Network

The pedestrian network in the vicinity of Collins Avenue station is considered to be of high sensitivity for pedestrians, due to the key attractors in the area including DCU and Our Lady of Victories Infant School and Boys National School which attract large volumes of pedestrians, all within close proximity to the station site. When travelling northbound on the R108 towards the proposed station site, footways are approximately 3m in width, with signalised crossings present. These crossings have dropped kerbs and tactile paving.

Students at Dublin City University can access the station from a segregated path. A staggered signalized crossing point is present where the R103 intersects the R108, with dropped kerbs and tactile paving.

A pedestrian comfort assessment has been undertaken to assess the baseline volume of passengers on the network surrounding Collins Avenue Station. Links were assessed against DCC guidance in the first instance, and then against the Transport for London (TfL) Pedestrian Comfort Calculator to determine the level of comfort for the available width. The full methodology adopted is detailed in the Overall Project TTA.

On the streets surrounding the proposed station, considered within this assessment, all the links comply with the DCC guidelines except for Glasnevin Avenue (west of the R108), which has footway widths below the DCC guidelines but is considered ‘Comfortable’, as shown in Figure 3.5. The reason for this is the provision of street furniture that has reduced the available footpath width.

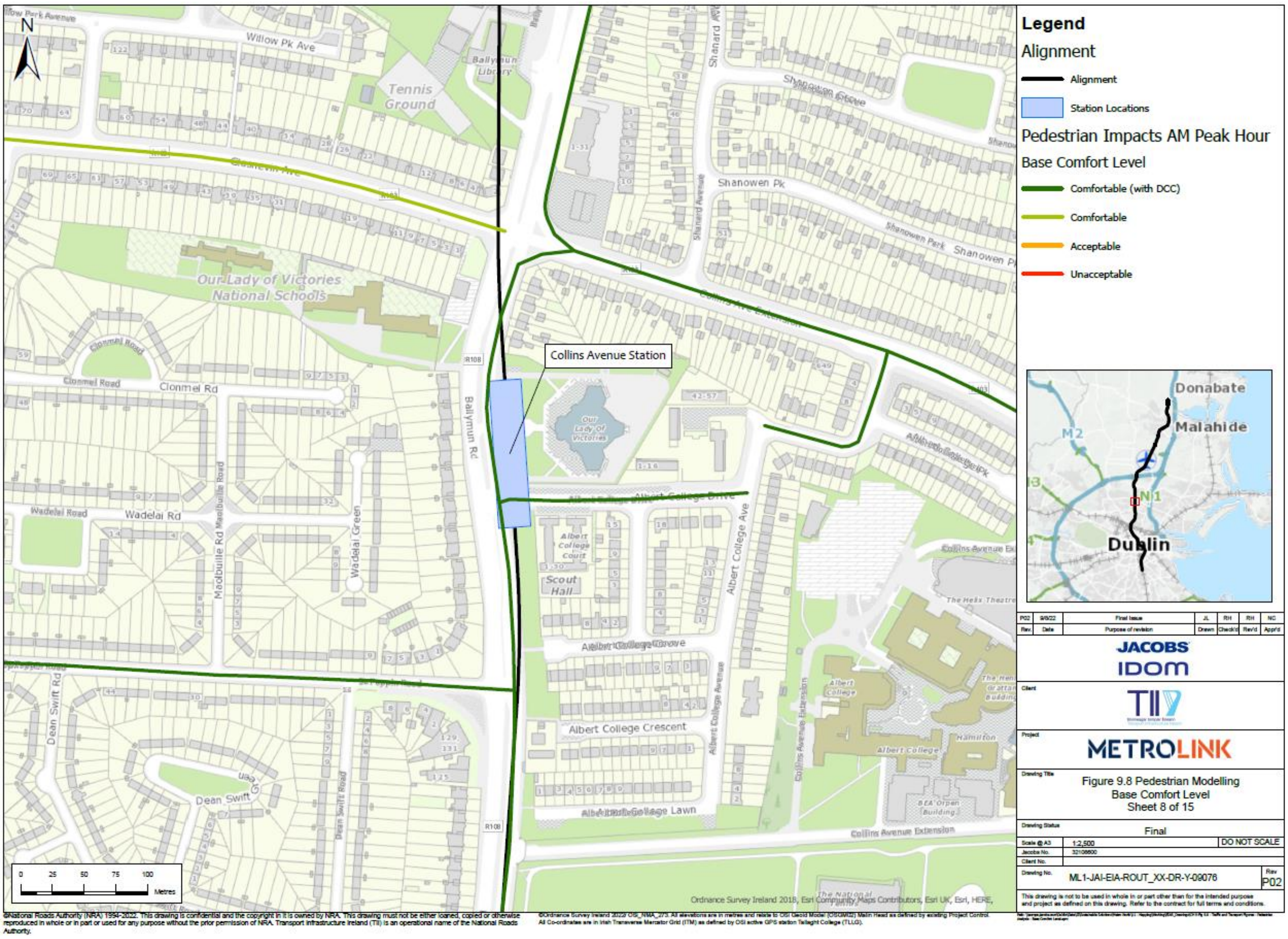


Figure 3.5: Pedestrian Comfort Assessment- Baseline Scenario

3.5.1 Pedestrian Link Counts

The Data Collection Report (ML1-JAI-TRA-ROUT_XX-RP-Y-00023) details the locations around Collins Avenue Station where pedestrian surveys were undertaken.

3.5.2 Baseline Accessibility Review

A baseline accessibility assessment has been undertaken to establish existing walking provision relevant to the proposed Collins Avenue Station. Catchment maps prepared for the accessibility analysis for walking are based on two criteria, the average speed for each mode and the existing road network. Therefore, maps do not reflect existing access restrictions for private roads and motorised roads.

The proposed Collins Avenue Station is located close to Dublin City University and residential catchments on Glasnevin Road, Dean Swift Road and Clonmel Road. The university and residential areas are located within an 15minute walking distance of the proposed Station as shown in Figure 3.6 below.

Figure 3.6 illustrates a 5min walking, 10min walking and 15min walking catchment from Collins Avenue Station. Table 3.3 lists local amenities within the 5min walking, 10min walking and 15min walking from the Collins Avenue Station.

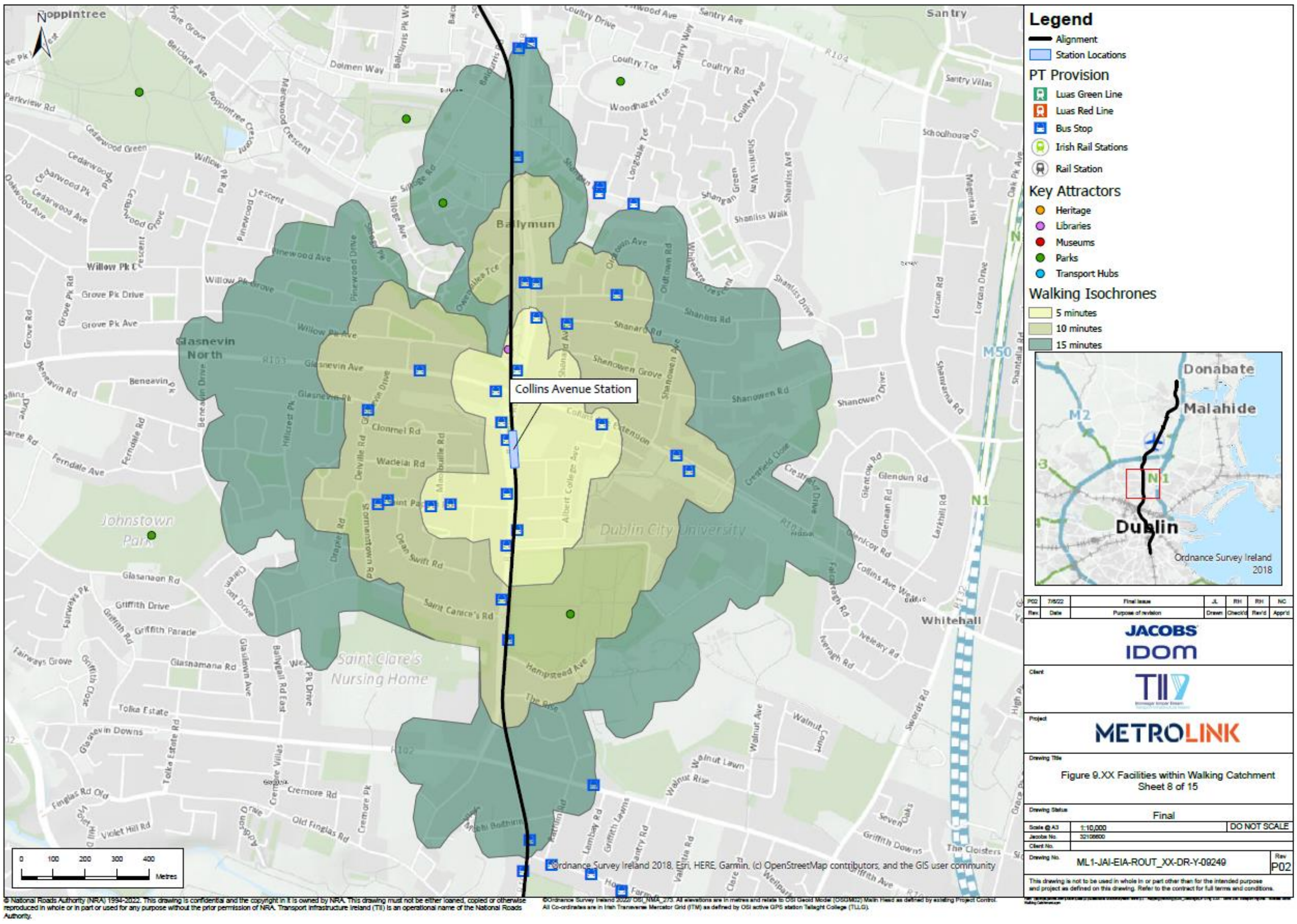


Figure 3.6: Collins Avenue Station Walking Catchment Area

Table 3.3: Local facilities and amenities within walking catchment area

Facilities within 5min walking	Facilities within 10min walking	Facilities within 15min walking
Ballymun Library	Scoil an tSeachtar Laoch	Santry Garda Station
Spar and Eurospar	SuperValu	St. Aidan's CBS (school)
Our Lady of Victories Boys National School	Trinity Comprehensive School	Dublin City University (DCU)
CDETB Adult Education Service	Ballymun Healthcare Facility	Hampstead Private Hospital
Our Lady of Victories Catholic Church	Dublin University City (DCU)	St. Kevin's College
	DCU Sports Complex	Axis Art Centre and Theatre

3.6 Future Receiving Environment – Pedestrian Network

The pedestrian network will not be altered as part of the Core Bus Corridor proposals. As part of the Project's improvements to the public realm around Collins Avenue, the pedestrian network at Our Lady of Victories Catholic Church will be reconfigured to facilitate permeability between the proposed location of the station's bicycle parking, and the station entrance.

3.7 Existing Cycle Network

Figure 3.7 illustrates Collins Avenue within the GDA Cycle Network. The R108 Ballymun Road is considered a Primary route within the network, with Feeder routes to the west along St. Canices Road, and a minor greenway through Albert College Park to the south of the station.

The cycle network in the vicinity of Collins Avenue is considered to be of Level C Quality of Service. A broken on-road advisory cycle lane is present on both sides of the R108 carriageway. Unclear markings for cyclists are present at the R103 intersection, at the proposed station location.

Improvements will be made to the current cycling infrastructure around the proposed Collins Avenue Station when the proposed Project is in place, with the provision of a 2m wide cycle lane in each direction on the R108 within the Project Boundary. As a result, the Quality of Service will improve from Level C in the Baseline scenario to Level B in the operational phase.

The full extent of the route from the Dublin City University to the station has on-road cycle lanes either of the road.

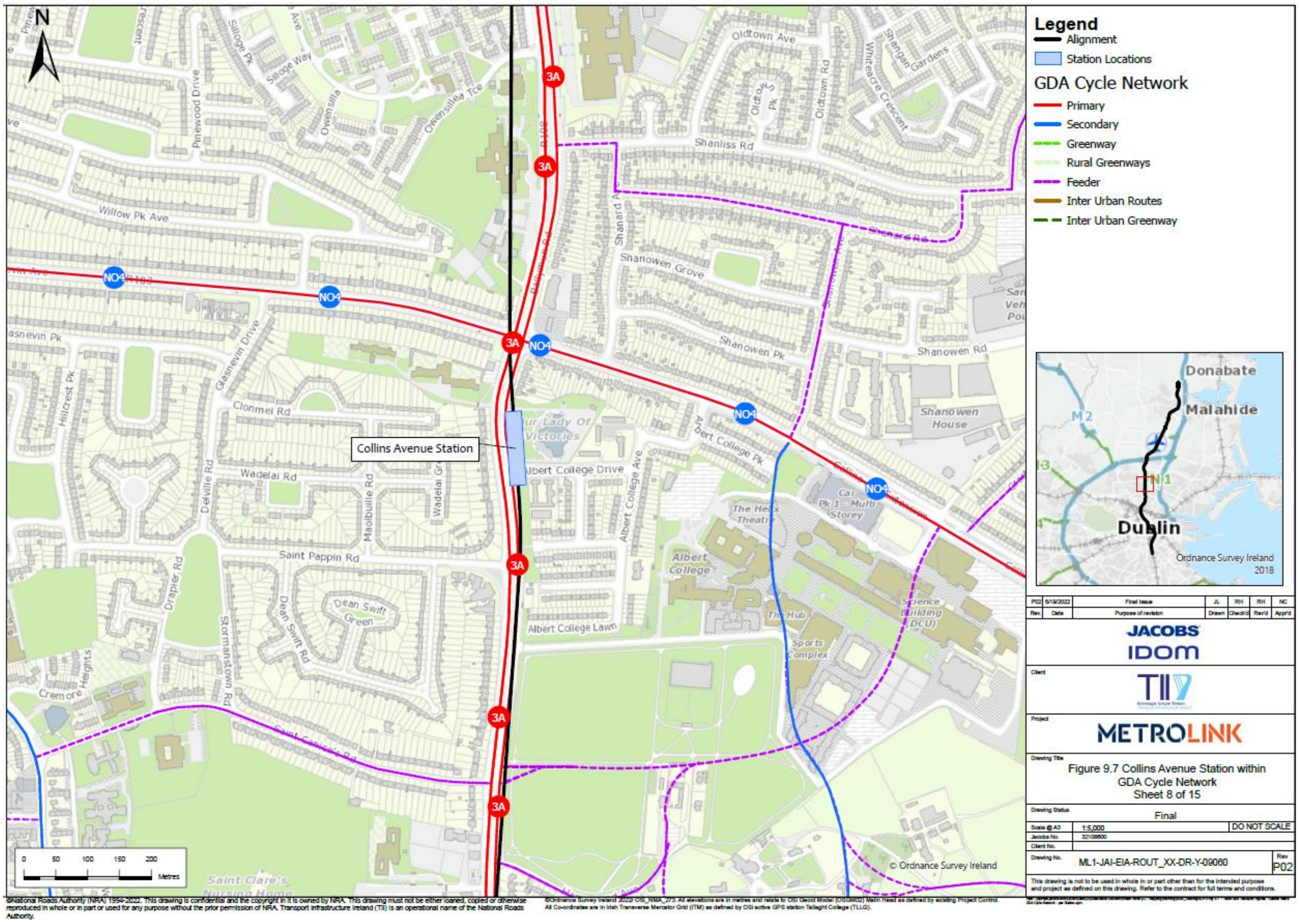


Figure 3.7: Proposed Station Location Within GDA Cycle Network

3.7.1 Baseline Accessibility Review

A baseline accessibility assessment has been undertaken to establish existing cycling provision relevant to the proposed Collins Avenue Station. Catchment maps prepared for the accessibility analysis for cycling are based on two criteria, the average speed for each mode and the existing road network. Therefore, maps do not reflect existing access restrictions for private roads and motorised roads.

Figure 3.8 illustrates a 5min and 10min cycle catchment from the Collins Avenue Station and the location of existing bike racks and Dublin Bike stations located in close proximity to the station.

Table 3.4 lists local amenities within this catchment.

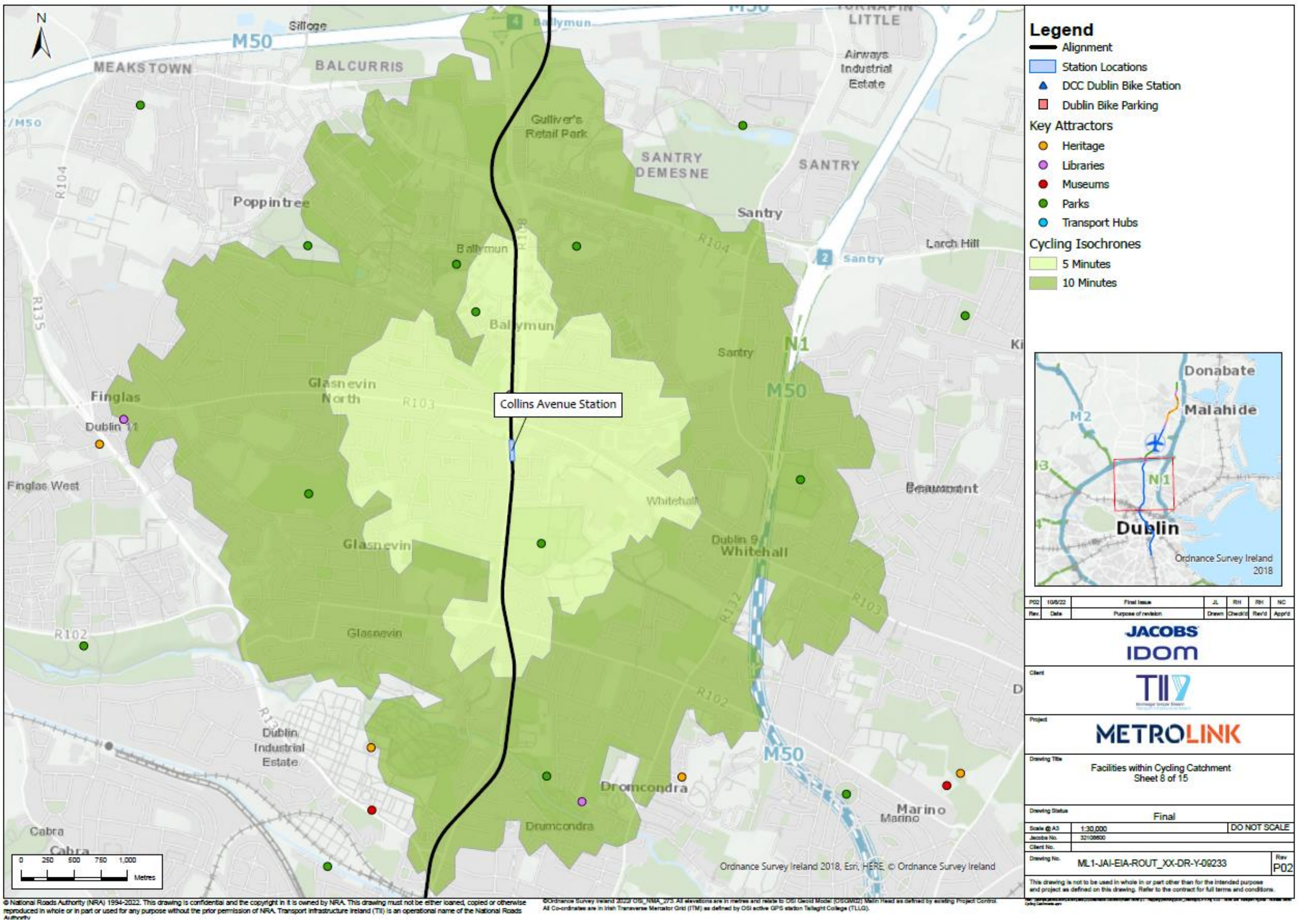


Figure 3.8: Collins Avenue Station Cycling Catchment Area

Table 3.4: Local facilities and amenities within cycling catchment area

Facilities within 10min cycling	Facilities within 15min cycling
Santry Garda Station	National Botanic Gardens
St. Aidan's CBS (school)	Bon Secours Hospital
Dublin City University (DCU)	St. Mary's Secondary School
Hampstead Private Hospital	Holy Child Boys National School
St. Kevin's College	Gaelscoil Ui Earcain
Axis Art Centre and Theater	Balcurris Park
	Johnstown Park
	Griffith Park
	Aldi Supermarket

3.8 Future Receiving Environment – Cycle Network

As part of the Bus Connects Core Bus Corridor proposals, the R108 will be reconfigured northbound to one traffic lane and one bus lane, the existing cycle lanes on the R108 will be widened. In the vicinity of the station, both cycle lanes will be segregated from road traffic, improving the quality of service for cyclists in this area.

4. The Proposed Project – Collins Avenue Station

4.1 Site Location and Development Context

The proposed Collins Avenue Station, as shown in Figure 4.1 is located along the eastern side of the R108. The station is situated south of the proposed Ballymun station and north of Griffith Park station, largely serving a residential area and Dublin City University. The majority of residential areas are to the west of the station, while the university is situated to the south east. The station is located west of the M1 and south of the M50 Junction 4, approximately 7km from Dublin Airport.

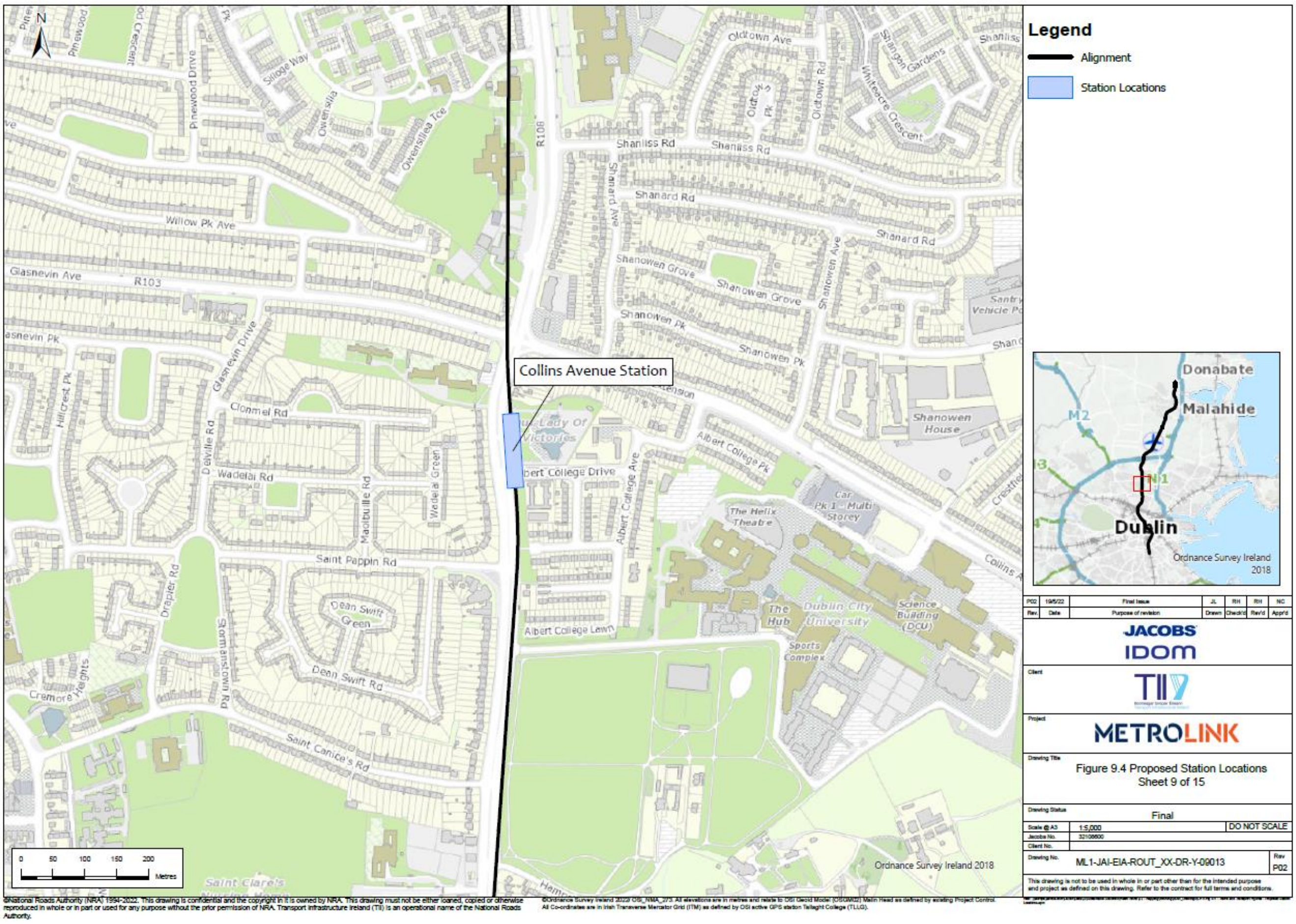


Figure 4.1 Proposed Site Location

Figure 4.2 illustrates the proposed layout for Collins Avenue Station including location of entrances and exits. The station platforms can be accessed via the existing footway provisions and next to the pedestrian crossing facilities on the R108 Ballymun Road.

There is a bus stop located on the R108 Ballymun Road next to the station entrance, providing a straightforward interchange opportunity.

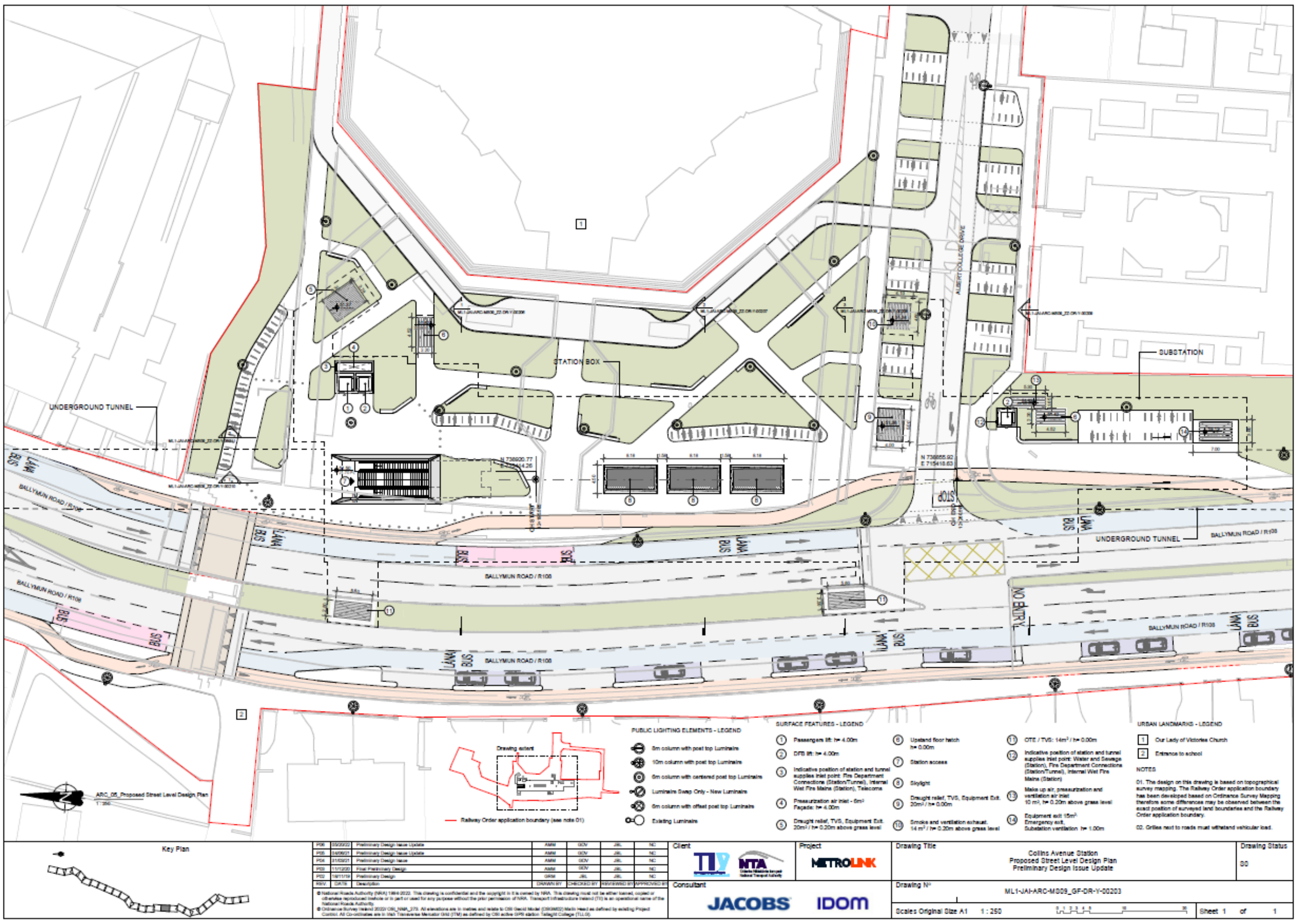


Figure 4.2 Collins Avenue Station Layout

5. Trip Generation / Trip Attraction

5.1 Operational Phase

Traffic estimates associated with the Collins Avenue Station Operational Phase have been established by utilising the National Transport Authority's (NTA) Eastern Regional Model (ERM). The ERM provides a comprehensive representation of multi-modal travel patterns across the GDA and is a suitable tool for the testing and appraisal of the Project.

5.1.1 Passenger Boarding and Alighting

Passenger demand modelling has been used to predict the numbers of passengers boarding and alighting at each station, and the resulting passenger load on MetroLink vehicles, for the years 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). The scenarios considered for assessment for each of the years 2035, 2050 and 2065 are outlines in Table 5.1.

Table 5.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project.
Do Minimum Scenario	Committed transport schemes in the absence of the Project
Do Something - Scenario A	Scenario with the Project and committed transport schemes only.
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for delivery by 2030 for Opening year (2030) and planned schemes under the Transport Strategy for the GDA for the Design Year (2045) and the Forecast Year (2060)

5.1.1.1 Boarding and Alighting Volumes

Table 5.2 to Table 5.7 show boarding, alighting and public transport interchange numbers for the Collins Avenue Station during the peak hours. All data has been retrieved from the ERM developed by the NTA. Data in this section is reported for the busiest hour within each of the following peak periods:

- AM: busiest hour between 07:00 – 10:00;
- LT (lunch time): busiest hour between 10:00 – 13:00;
- SR (school run): busiest hour between 13:00 – 16:00; and,
- PM: busiest hour between 16:00 – 19:00.

Figure 5.1 presents the volume of boarding and alighting passengers at Collins Avenue Station over the 12hr peak period (07:00-19:00) in both Scenario A and Scenario B. In 2035, Scenario B has a slightly higher volume of boarding passengers than Scenario A, with 7,700 passengers compared to 7,600 passengers in Scenario A. In 2050 and 2065, scenario A has higher boarding and alighting numbers than scenario B. In the year 2050 boarding passenger numbers for scenario A are approximately 8,600 passengers compared to scenario B of 7,700 and alighting numbers for scenario A is approximately 9,800 and scenario B, 7,800 passengers. In the year

2065, boarding passenger numbers for scenario A are at 9,800 and scenario B passenger numbers are 8,200. Passenger alighting numbers in 2065 are 11,000 for scenario A and 8,500 for scenario B.

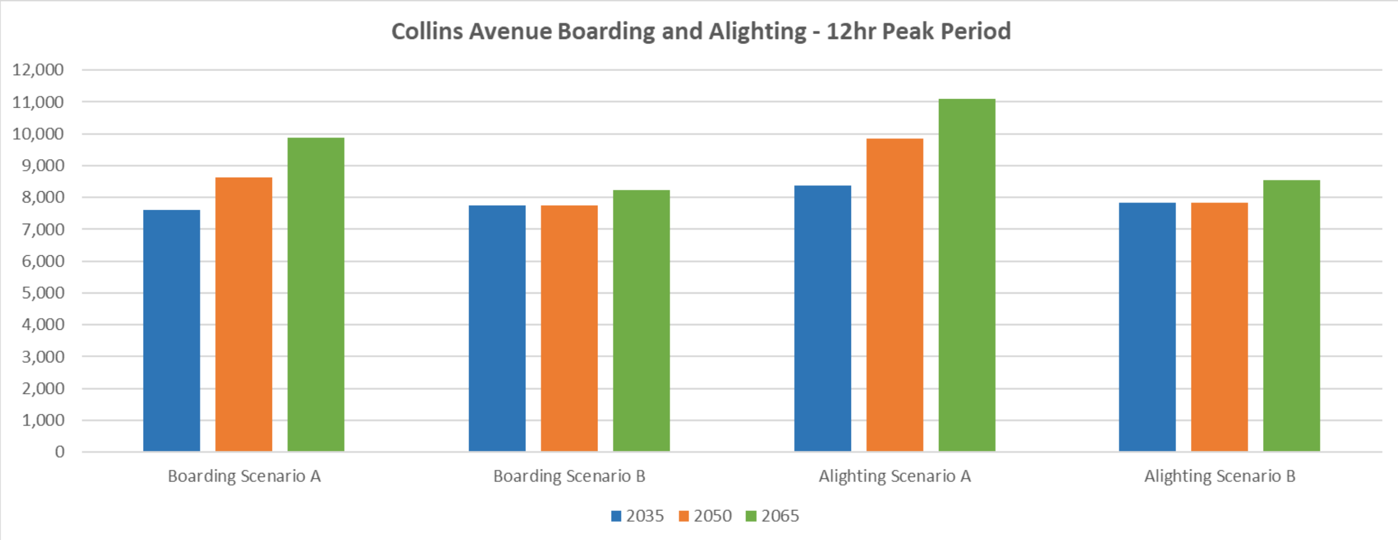


Figure 5.1: Collins Avenue 12hr Boarding and Alighting in Scenario A and Scenario B

5.1.1.2 Boarding and Alighting Volumes: Scenario A

Table 5.2 to Table 5.4 below present the boarding and alighting passenger numbers for Collins Avenue Station in Scenario A.

For the Opening Year, 2035, during the AM peak hour 1,128 passengers are expected to board the Project at Collins Avenue Station and head south, with 221 boarding and heading north. Furthermore, 661 northbound passengers are expected to alight at Collins Avenue, with 718 southbound passengers alighting. In the PM peak hour, 394 passengers are estimated to board and head south, with 480 heading north. In contrast, 902 northbound passengers are predicted to alight at Collins Avenue, along with 223 southbound passengers.

Table 5.2: Boarding and Alighting Numbers at Collins Avenue Station in 2035, Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	221	661	4,689	126	202	3,160	290	266	3,977	480	902	7,269
Southbound	1,128	718	9,956	246	249	3,772	237	206	3,814	394	223	4,230

Source: East Regional Model (ERM)

Table 5.3 shows the boarding and alighting numbers at Collins Avenue Station for the year 2050. During the AM peak hour, 1,230 southbound passengers are expected to board the Project at Collins Avenue Station while 692 northbound passengers will alight. During the PM peak hour, 409 southbound passengers and 550 northbound passengers will board at Collins Avenue Station. 981 northbound and 287 southbound passengers are expected to alight here.

Table 5.3: Boarding and Alighting Numbers at Collins Avenue Station in 2050, Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	282	692	6,059	169	226	4,534	355	294	5,052	550	981	9,092
Southbound	1,230	831	11,845	279	374	5,587	256	322	5,013	409	287	5,401

Source: East Regional Model (ERM)

For the year 2065, during the AM peak hour, 1,366 passengers are expected to board the Project at Collins Avenue Station and travel southbound while 747 nothbound passengers will alight. During the PM peak hour, 582 northbound passengers and 449 southbound passengers are expected to board while 1,099 northbound passengers will alight.

Table 5.4: Boarding and Alighting Numbers at Collins Avenue Station in 2065, Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	356	747	7,518	221	261	5,539	448	338	6,838	582	1,099	11,222
Southbound	1,366	876	14,103	327	455	6,417	288	389	6,278	449	319	6,893

Source: East Regional Model (ERM)

5.1.1.3 Boarding and Alighting Volumes: Scenario B

Table 5.5 to Table 5.7 below highlight the boarding and alighting passenger numbers for Collins Avenue Station in Scenario B.

For the year 2035, during the AM peak, 1,113 passengers will board the Project and head south, with 632 northbound passengers alighting. During the PM peak hour, 509 southbound passengers are expected to board, while 817 northbound passengers will alight.

Table 5.5: Boarding and Alighting Numbers at Collins Avenue Station in 2035, Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	204	632	4,765	132	203	3,254	271	258	4,158	459	817	6,708
Southbound	1,113	681	9,768	236	252	4,105	257	197	4,040	509	160	4,284

Source: East Regional Model (ERM)

Table 5.6 shows the passenger boarding and alighting numbers for the 2050 year. During the AM peak hour, it is expected 941 passengers will board the Project at Collins Avenue Station and head south. Meanwhile, 259 passengers are expected to board and head north. 561 northbound passengers and 850 southbound passengers will alight the Project at Collins Avenue Station. During the PM peak hour, 385 southbound passengers and 543 northbound passengers are expected to board, while 645 northbound and 207 southbound passengers are expected to alight.

Table 5.6: Boarding and Alighting Numbers at Collins Avenue Station in 2050, Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	259	561	6,324	221	174	4,999	387	198	5,268	543	645	8,572
Southbound	941	850	11,251	197	338	5,615	215	233	5,272	385	207	5,913

Source: East Regional Model (ERM)

Table 5.7 illustrates that the busiest period in year 2065 is expected to be during the AM peak hour with 970 southbound passengers boarding. During the PM peak hour 378 southbound passengers are expected to board while 688 northbound passengers are expected to alight.

Table 5.7: Boarding and Alighting Numbers at Collins Avenue Station in 2065, Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	308	583	7,326	213	189	5,815	445	214	6,824	604	688	9,491
Southbound	970	940	14,022	212	386	6,664	220	258	6,344	378	233	6,364

Source: East Regional Model (ERM)

5.1.1.4 Public Transport Interchange Volumes

Table 5.8 and Table 5.9 present the volume of passengers interchanging to and from the Project with other public transport modes in Scenario A and Scenario B respectively. The majority of passengers will originate from and have final destinations at the surrounding zones; however, a significant number will also interchange with the bus network in both the AM and PM peak hours. Collins Avenue Station is served by several bus routes with less than 15-minute frequencies. The station is located along E spine which offers frequencies between 8-10 minutes, as shown in Section 3.2.

Table 5.8: Transfers To/From Other Public Transport Modes in Scenario A

Scenario A									
Year	Peak	Boarding				Alighting			
		First boarding	From Bus	From Rail/DART	From Luas	Final stop	To Bus	To Rail/DART	To Luas
2035	AM	942	407	-	-	1121	257	-	-
	PM	725	149	-	-	655	469	-	-
2050	AM	1030	483	-	-	1238	285	-	-
	PM	796	163	-	-	731	537	-	-
2065	AM	1179	542	-	-	1299	324	-	-
	PM	840	192	-	-	834	584	-	-

Source: East Regional Model (ERM)

Table 5.9: Transfer To/From Other Public Transport Modes in Scenario B

Scenario B									
Year	Peak	Boarding				Alighting			
		First Boarding	From Bus	From Rail/DART	From Luas	Final Stop	To Bus	To Rail/DART	To Luas
2035	AM	931	386	-	-	1093	220	-	-
	PM	786	181	-	-	655	322	-	-
2050	AM	920	281	-	-	1265	145	-	-
	PM	815	113	-	-	641	212	-	-
2065	AM	979	300	-	-	1363	160	-	-
	PM	865	116	-	-	691	230	-	-

Source: East Regional Model (ERM)

5.1.1.5 Distribution of Boarding and Alighting Passengers

Figure 5.2 shows the origins of passengers arriving to board at the station and Figure 5.3 shows the destination of passengers alighting at Collins Avenue Station during the AM peak how (figures present scenario A only as a visual example, spatial distributions will be similar across Scenario A and Scenario B). The width of the lines is proportional to the number of commuters leaving/arriving at the station. The main origins of passengers in the AM peak is the Dublin City University to the south-east of the station. The modelling indicates that passengers will come from the Willow Park residential areas to the west of the station, some travelling for over 15 minutes. Towards the north-east, the modelling indicates that passengers will come from the Santry residential area and from the Omni Shopping Centre.

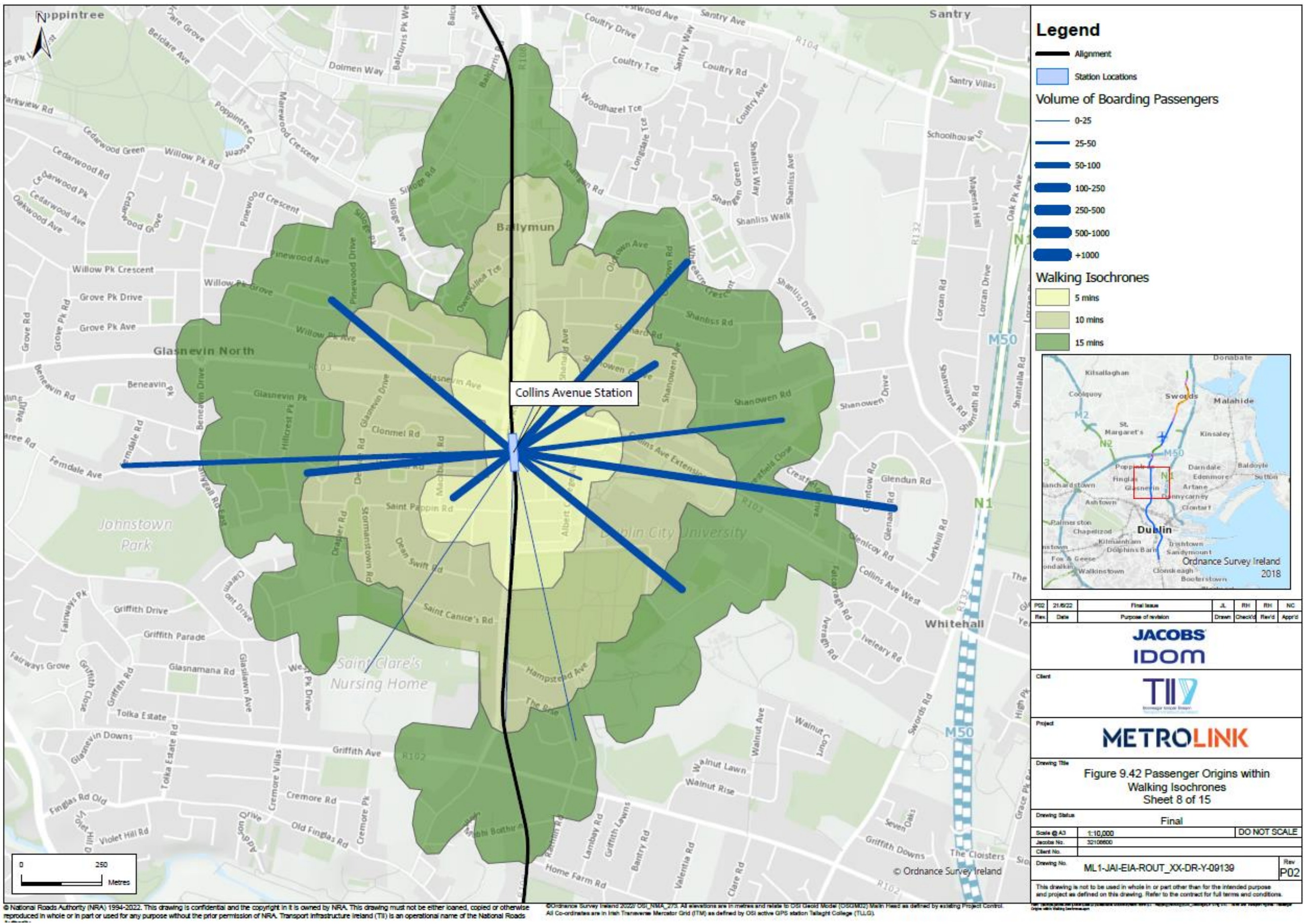


Figure 5.2: Origins of Boarding Passengers During AM peak hour within Walking Catchment Areas

The destinations for disembarking passengers in the AM peak are predicted to be predominantly the Dublin City University campus located to the southeast of the station. To the west of the station, passengers are disembarking and travelling towards the commercial land use in Finglas East, while a number of passengers are heading south of the station to the various land uses along the R108.

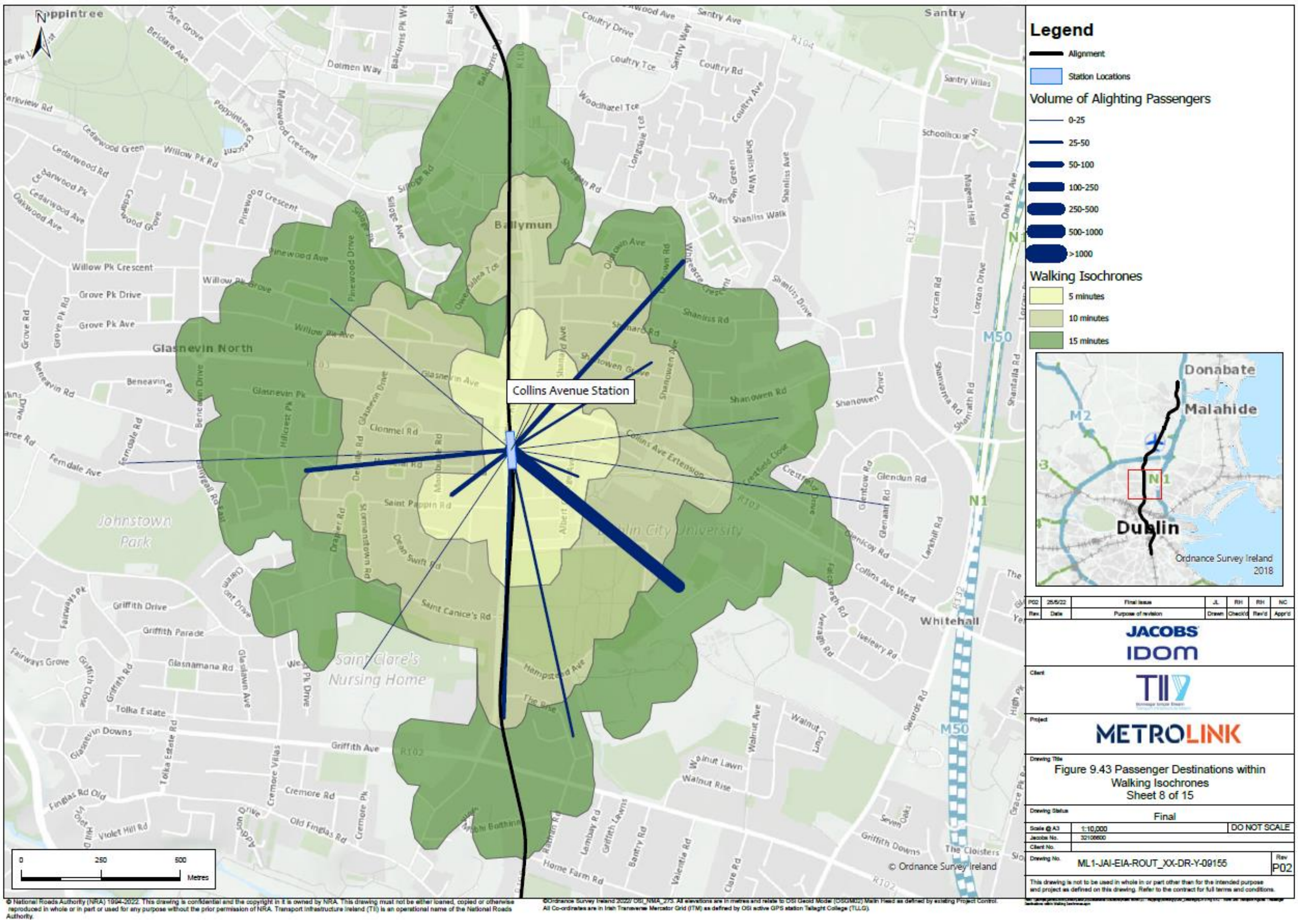


Figure 5.3: Final Destinations for Alighting Passengers During AM peak hour within Walking Catchment Areas

6. Assessment of Impacts

6.1 Operational Phase

As part of the assessment of impacts associated with the Operational Phase of the Project, the impact of the proposed Collins Avenue Station has been examined on all modes of transport – public transport (PT), general traffic, walking and cycling.

6.1.1 Public Transport Assessment

The ERM model has been interrogated in order to estimate the reduction in private car travel associated with origin and destination trips in the zones around Collins Avenue Station. In Scenario A, there is a 13% increase in trip demand between 2035 and 2050, increasing from 66,499 trips in 2035 to 75,227 trips in 2050. There is a 12% increase in trip demand between 2050 and 2065, reaching a demand of 84,021 trips in 2065. Between the Do Minimum and Do Something scenarios, there is a 3-percentage point increase in PT mode share in 2035, from 23% in the Do Minimum scenario to 26% in the Do Something scenario. In 2050, there is a 4- percentage point increase in PT mode share increasing from 23% in the Do Minimum scenario to 27% in the Do Something scenario. There is a 5-percentage point increase in PT mode share in 2065 from 23% in the Do Minimum scenario, to 28% in the Do Something scenario.

Car mode share remained the same, at 40% in both the Do Minimum and Do Something scenarios for 2035. In both 2050 and 2065, there is a decrease of one percentage point between the two scenarios. In 2050, car mode share will decrease from 39% in the Do Minimum scenario, to 38% in Do Something. In 2065, car mode share decreases from 37% to 36% respectively between the Do Minimum and Do Something scenarios.

Active Modes mode share (which includes Walking and Cycling) reduces by 3-4 percentage points in all years. Whilst end-to-end Active Modes trips will reduce, there will be an increase in Active Modes trips to and from the station where passengers will interchange with the Project. Overall, there is a shift towards sustainable modes (Active Modes and PT combined), and a reduction in Car trip demand at Collins Avenue.

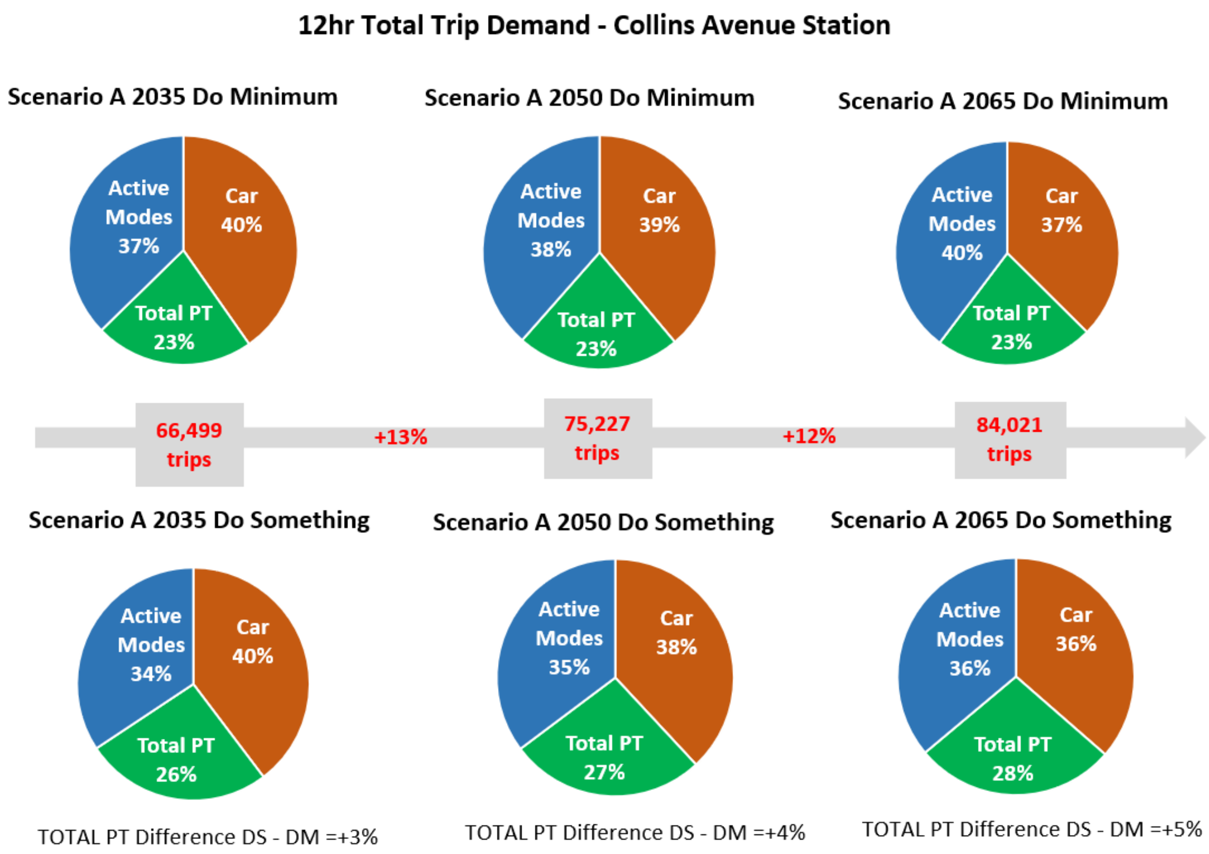


Figure 6.1: Collins Avenue Mode Share - Scenario A

In Scenario B, there is a 13% increase in trip demand between 2035 and 2050, increasing from 66,636 trips in 2035 to 75,039 trips in 2050. There is a 12% increase in trip demand between 2050 and 2065, reaching a demand of 83,828 trips in 2065. Between the Do Minimum and Do Something scenarios, there is a 4 percentage point increase in PT mode share in 2035, 2050 and 2065 from 23% in the Do Minimum scenario to 27% in the Do Something scenario, in 2035. In 2050, the Do Minimum scenario has 24% mode share for total public transport, whilst the Do Something scenario is 28%. In 2065, PT mode share increases from 24% to 28% between the Do Minimum scenario and Do Something.

Car mode share decreases by 1 percentage point in 2035, 2050 and 2065. In 2035, car mode share decreases from 40% in the Do Minimum to 39% in the Do Something. In 2050, decrease from 38% to 37% between the Do Minimum and Do Something scenarios, and in 2065, a decrease from 37% to 36% between the two scenarios.

Active Modes mode share (which includes Walking and Cycling) reduces by 3 percentage points in all years. Whilst end-to-end Active Modes trips will reduce, there will be an increase in Active Modes trips to and from the station where passengers will interchange with the Project. Overall, there is a shift towards sustainable modes (Active Modes and PT combined), and a reduction in Car trip demand at Collins Avenue.

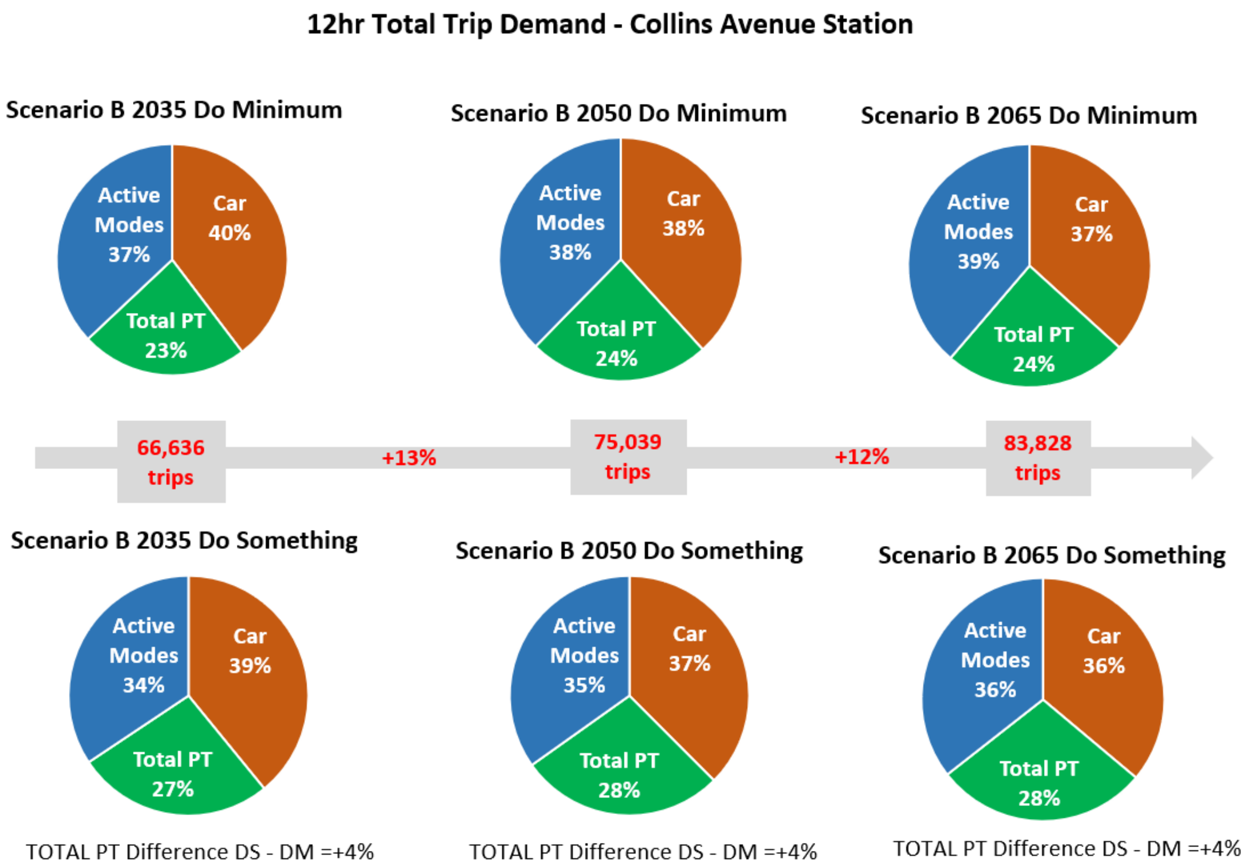


Figure 6.2: Collins Avenue Mode Share - Scenario B

The future street level layout provides for a bus lane on both sides of the R108. Southbound, the road layout on the R108 will be maintained with two lanes of vehicular traffic and one bus lane, however, northbound the road layout will be reduced to one lane for vehicular traffic and a bus lane as part of the Bus Connects Core Bus Corridors proposals. The locations of the existing bus stops will be maintained. The proposed station location is approximately 100m from the Orbital Route as part of the Bus Network Redesign proposals.

Figure 6.3 presents the changes in public transport mode share (including the Project) in Scenario A 2065 AM peak hour, with Figure 6.4 presenting the same for Scenario B 2065 AM peak hour. In the 2035, 2050 and 2065 AM peak hour, the zones surrounding Collins Avenue Station see an increase in PT usage (including the Project) of up to 10 percentage points. In Scenario B 2035, 2050 and 2065 the zones around Collins Avenue Station see an increase in PT mode share of up to 10 percentage points.

In the PM peak hour, the zones around Collins Avenue Station see an increase in PT mode share of up to 10 percentage points in Scenario A 2035, 2050 and 2065. In Scenario B 2035, 2050 and 2065 the zones around Collins Avenue Station see an increase of up to 10 percentage points in PT mode share.

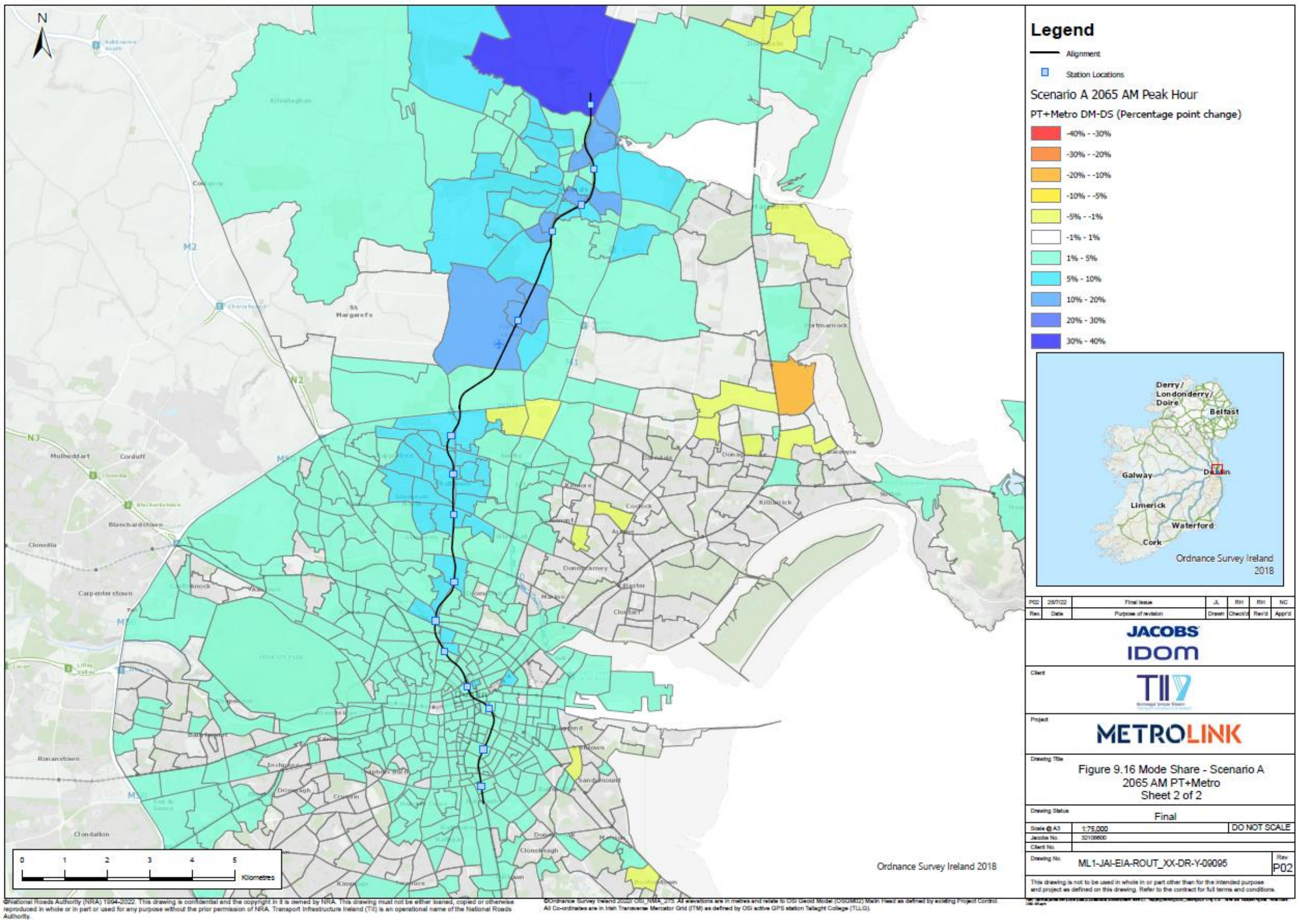


Figure 6.3: Changes in PT (including Project) Mode Share Scenario A 2065 AM Peak Hour

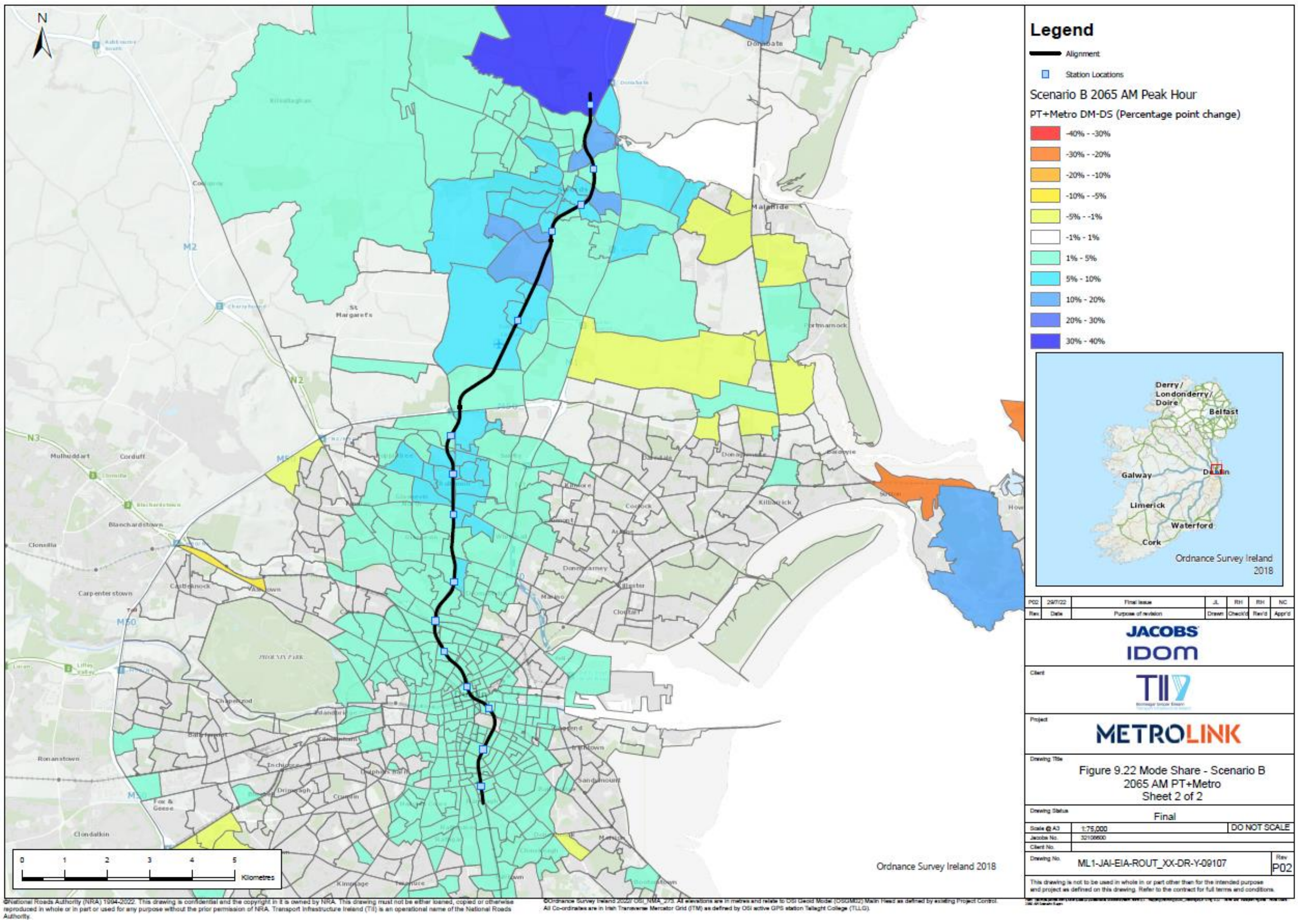


Figure 6.4: Changes in Public Transport (Including the Project) Mode Share in Scenario B 2065 AM Peak Hour

End-to-end public-transport-only journey time comparisons between Do Minimum and Do Something scenarios, including interchange between the Project and other public transport modes, have been undertaken to investigate benefits to journey time with the proposed Project in place in both Scenario A and Scenario B. The assessments were carried out for zones located across the city as illustrated in Figure 6.5 and Table 6.1. These zones have been identified using local knowledge of population settlements and trip attractors.

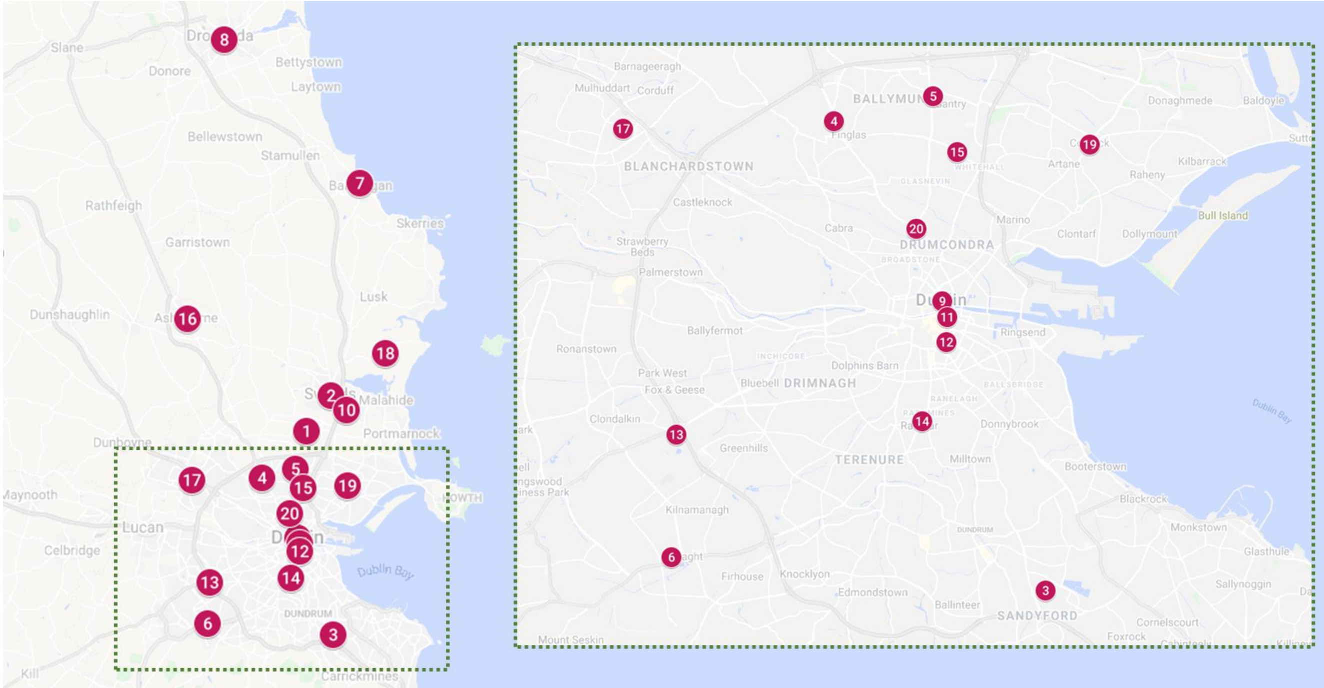


Figure 6.5: Zones assessed for public transport journey time

Table 6.1: Zones assessed for public transport journey time

Nb	Location	Nb	Location	Nb	Location	Nb	Location
1	Dublin Airport	6	Tallaght	11	College Street	16	Ashbourne
2	Swords Pavilion	7	Balbriggan	12	St. Stephen's Green	17	Blanchardstown
3	Sandyford	8	Drogheda	13	Red Cow	18	Donabate
4	Finglas	9	O'Connell Street	14	Rathgar	19	Coolock
5	Ballymun	10	Sword East	15	DCU	20	Glasnevin

Collins Avenue station is located within the Finglas zone/ area.

In Scenario A, the following changes to journey times are observed:

- In the 2035, 2050 and 2065 AM period, public transport from Finglas, to the west of the Collins Avenue Station location, into the Dublin City Centre locations of O' Connell Street will have time savings of less than 1 minute when the proposed project is in place.
- During the PM period, public transport journeys from Finglas to areas in north Dublin such as Swords Pavilion, will see savings of 26 minutes in 2035 and 2050, and 27 minutes in 2065; and to Swords East, savings of approximately 16 to 25 minutes in 2035, 2050 and 2060.

In Scenario B, the following changes to journey times are observed:

- In the 2035, 2050 and 2065 AM period, public transport from Finglas, to the west of the Collins Avenue Station location, into the Dublin City Centre locations of O' Connell Street will have time savings of less than a minute.
- During the PM period, public transport journeys from Finglas to areas in north Dublin such as Swords Pavilion will see time savings of approximately 22 to 26 minutes in 2035, 2050 and 2065; and to Swords

East will see time savings of approximately 19 minutes in 2035, an average of 11 minutes in 2050 and 2065.

6.1.2 Traffic Impact Assessment

The future street level layout includes a realignment of the current road layout with a reduction from two lanes to one northbound lane for vehicular traffic on the R108 to the immediate west of the station. Southbound, the existing road layout of two vehicular traffic lanes, will be maintained. These changes to the street level layout are as a result of the Bus Connects Core Bus Corridor proposals on the R108.

Figure 6.6 presents the changes in Car mode share in Scenario A 2065 AM peak hour, with Figure 6.7 presenting the same for Scenario B 2065 AM peak hour. In both Scenario A and Scenario B during both the AM peak and the PM peak, in all forecast years, the zones around Collins Avenue Station see a reduction in Car mode share of up to 5 percentage points. In the PM peak hour in scenario B across all forecast years, some zones within a close proximity to Collins Avenue Station will see a change in car mode share between a 1% increase and 1% decrease.

Over the 12hr period, the zones within a 2km radius of Collins Avenue Station see a reduction of over 120 car trips between the Scenario A 2035 Do Minimum and Do Something scenarios, reaching a reduction of over 300 trips in Scenario A 2050. In 2065, there is a reduction of 470 car trips between the Do Minimum and Do Something scenarios. In Scenario B, these zones see a reduction of over 110 car trips between the 2035 Do Minimum and Do Something scenarios, increasing to a reduction of 300 car trips in 2050. 2065 sees a reduction of 250 car trips between the Do Minimum and Do Something scenarios.

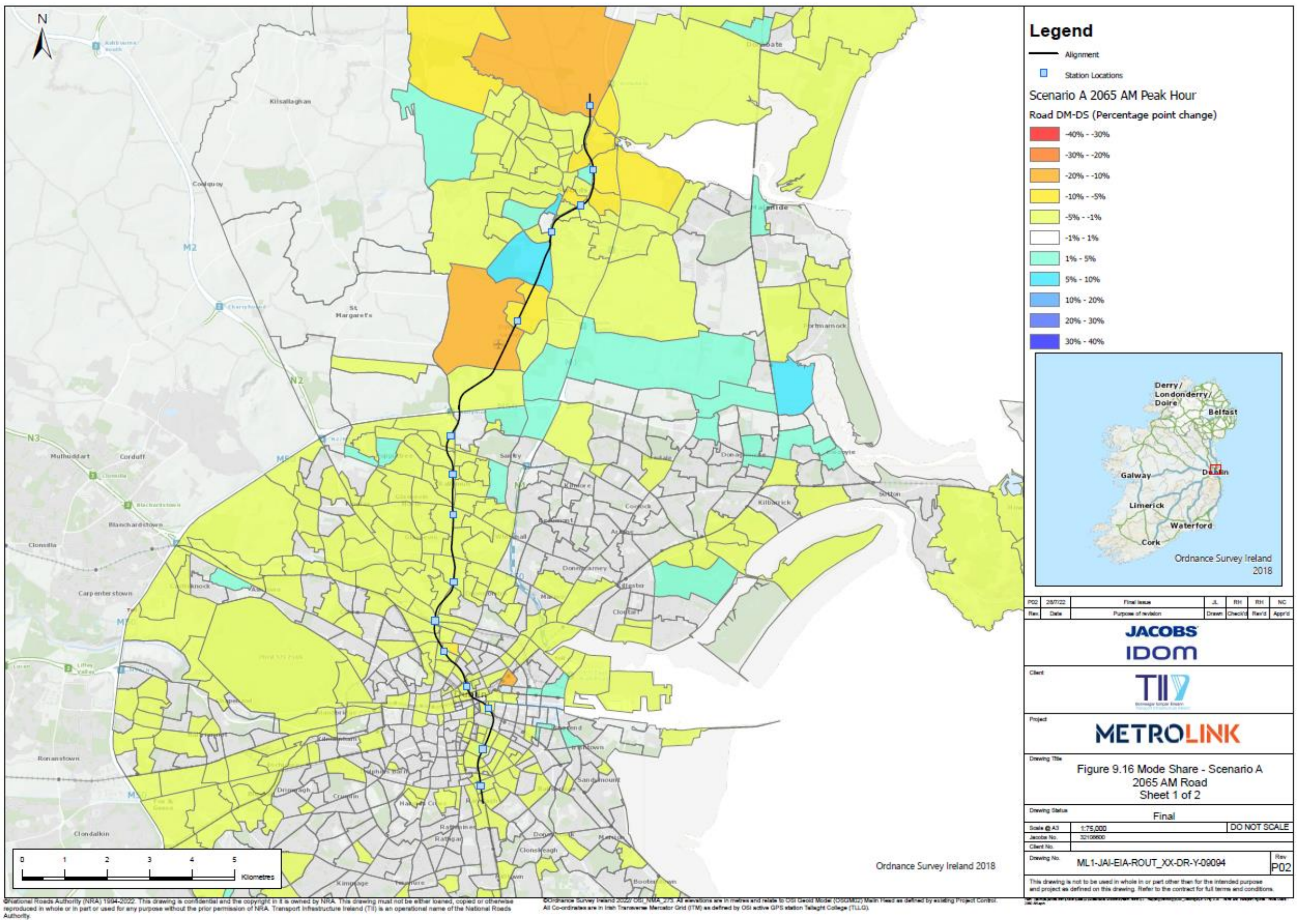


Figure 6.6: Changes in Car Mode Share in Scenario A 2065 AM Peak Hour

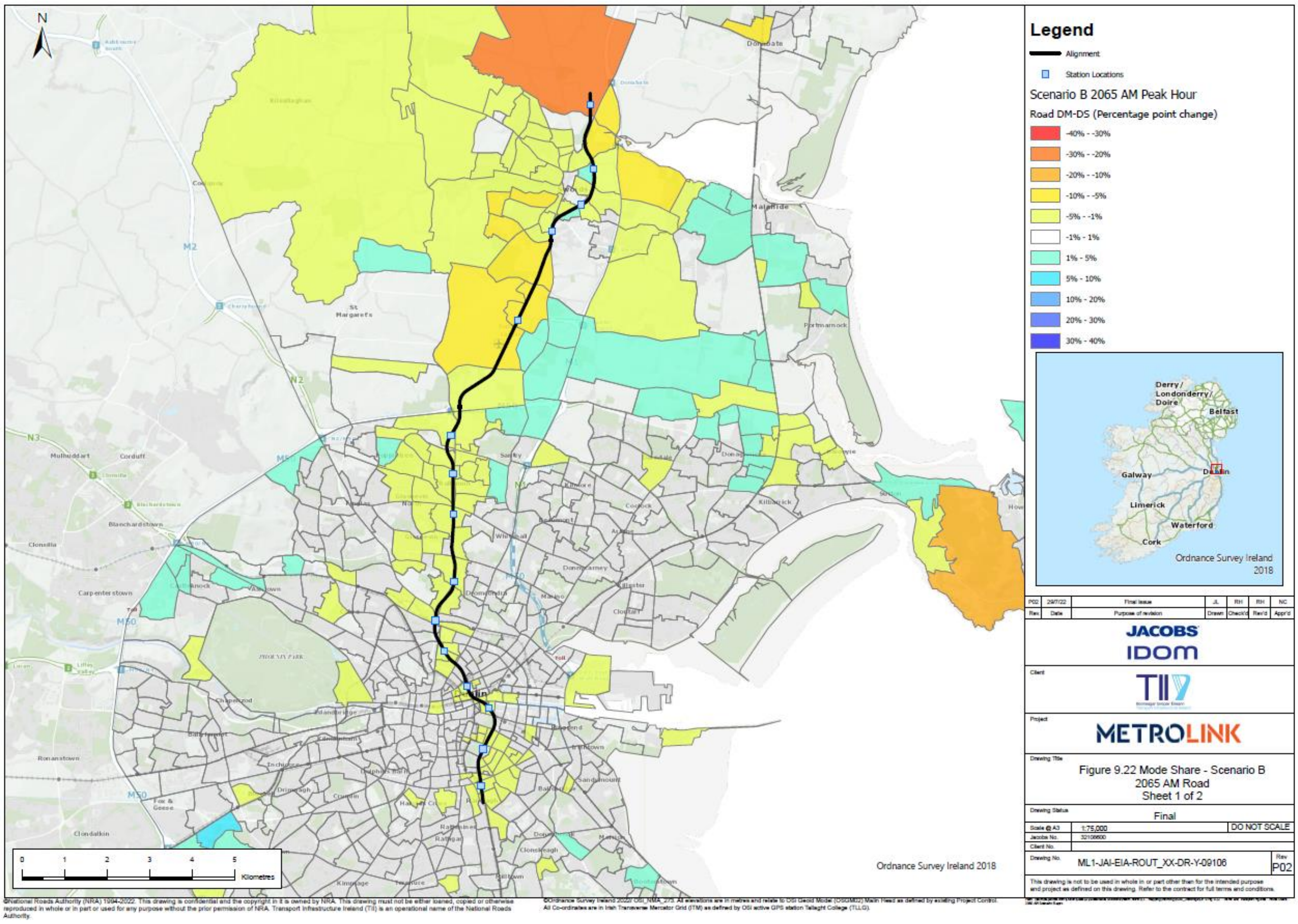


Figure 6.7: Changes in Car Mode Share in Scenario B 2065 AM Peak Hour

6.1.3 Pedestrian Impact Assessment

The proposed street level layout provides for pedestrian footways on both sides of the R108. The existing staggered signalized crossing will be realigned to be in line to facilitate desire lines from the school and bus stop on the northbound side of the R108. Additional footways will also be provided through the grounds of Our Lady of Victories Church to provide connections to the surrounding residential areas.

6.1.3.1 Pedestrian Footway Comfort Assessment

An assessment of the pedestrian provision around the station has been undertaken, in order to confirm its robustness in catering for the additional demand associated with the proposed project. The assessment comprises of a 'Footway Comfort Assessment', which predicts the pedestrian comfort levels based on industry guidance, taking cognisance of factors including pedestrian demand and footway width. Furthermore, an additional assessment has been undertaken in order to determine the adequacy of pedestrian crossing provisions in catering for predicted station demand.

The main origins of passengers at Collins Avenue station in the AM peak is the Dublin City University to the south-east of the station. Modelling indicates that passengers will come from the Willow Park residential areas to the west of the station, some travelling for over 15 minutes. Towards the north-east, the modelling indicates that passengers will come from the Santry residential area and from the Omni Shopping Centre. To the west of the stations, passengers are disembarking and travelling towards the commercial land uses in Finglas East, while several passengers are heading south of the station to the various land uses along the R108 Ballymun Road.

The Scenario A 2050 design year was assessed, with Scenario A 2065 also assessed as the 'worst-case scenario' for passenger numbers, as this scenario has the highest volume of total AM passenger demand in the future year between both Scenario A and Scenario B (almost 61,000 AM boarding passengers across the alignment in Scenario A, compared to almost 55,000 AM boarding passengers in Scenario B). At all stations, the passenger demand in the AM peak hour is lower in Scenario B than in Scenario A, with the exception of Fosterstown Station where there is a 12% increase in Scenario B. As such, Scenario B has not been assessed, with the exception of Fosterstown Station to ensure that all possible significant impacts are accounted for. It has been assumed that all of the Project's associated pedestrian movements are 'new' onto the network, i.e they are not currently occurring along the section of the footway network under review.

The results show that in 2050, Glasnevin Avenue, Ballymun Road and St Pappin's Road will fall below DCC guidance, however they will have an 'Acceptable' pedestrian comfort level.

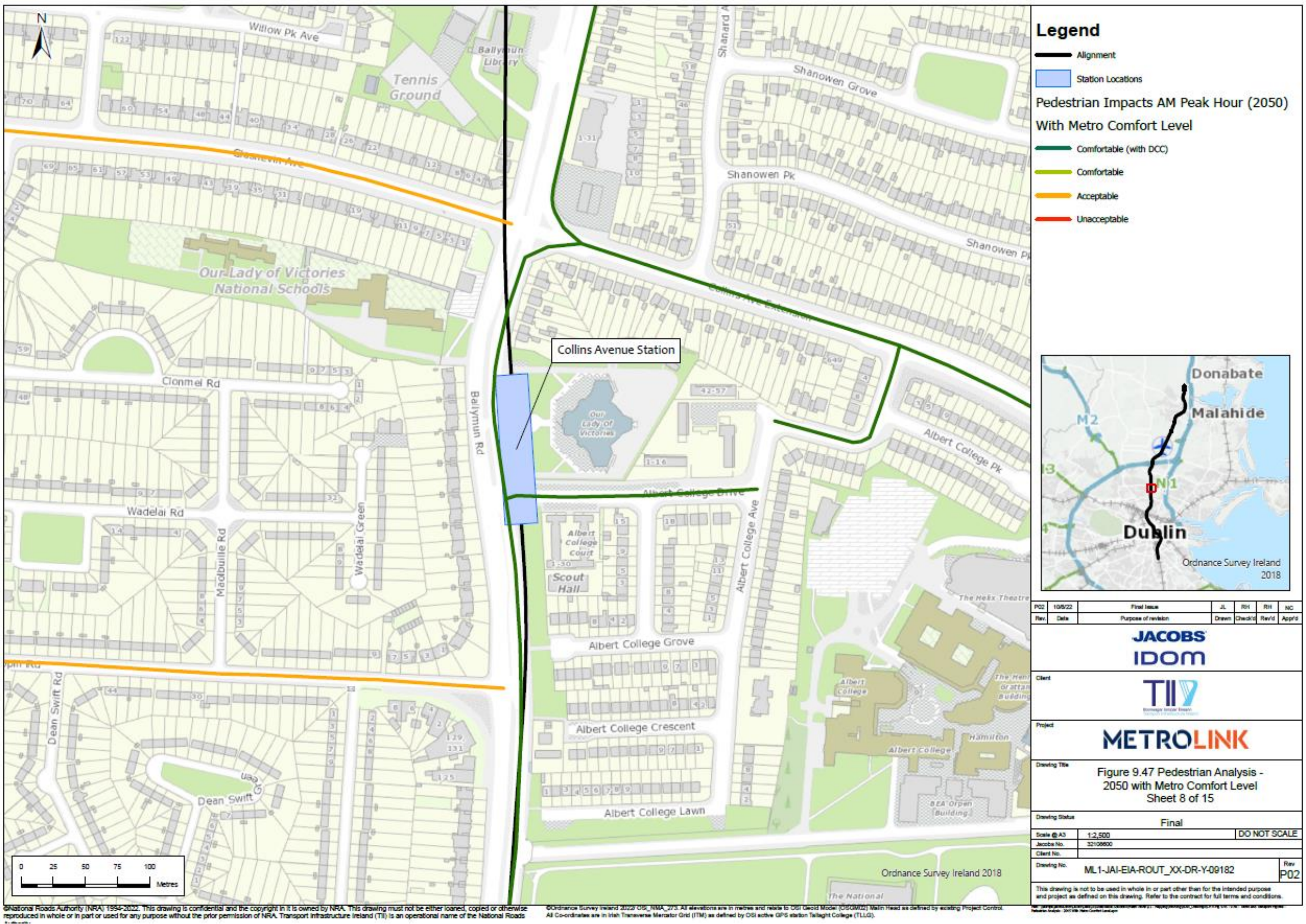


Figure 6.8: Pedestrian Comfort Assessment with the Project 2050 AM Peak Hour

In the 2065 AM peak hour, Glasnevin Avenue changes to 'Uncomfortable', while Ballymun Road South and St Pappin's Road have an 'Acceptable' comfort level. Glasnevin Avenue has large grass verges on footways, with inappropriately placed bins reducing the available clear width for pedestrians.

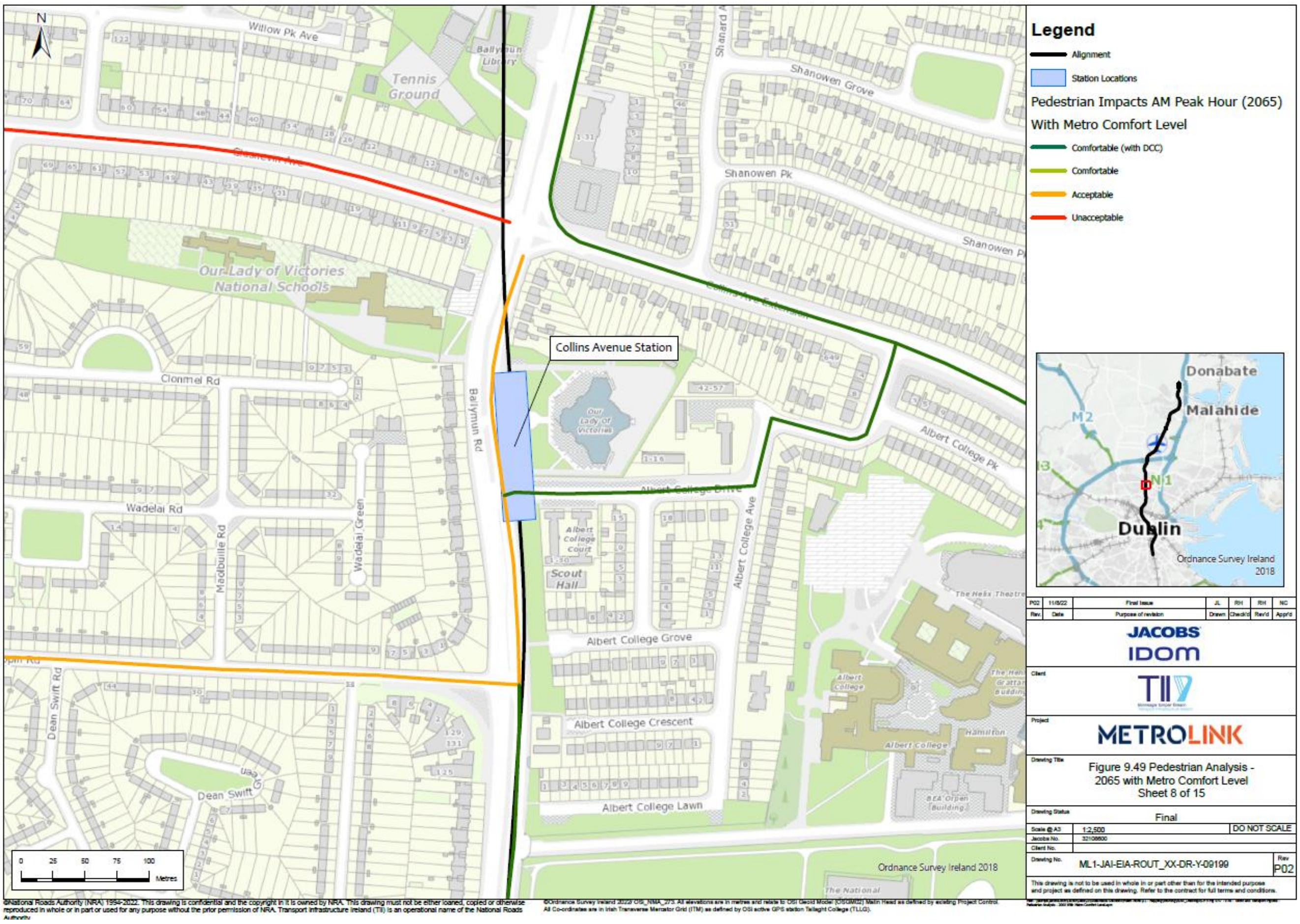


Figure 6.9: Pedestrian Comfort Assessment with the Project 2065 AM Peak Hour

6.1.4 Cyclist Impact Assessment

Improvements will be made to the current cycling infrastructure around the proposed Collins Avenue station when the Project is in place, with the provision of a 2m wide cycle lane in each direction on the R108 within the Project Boundary. As a result, the Quality of Service will improve from Level C in the Baseline scenario to Level B in the Operational Phase.

A methodology has been applied to determine the potential demand for cycle parking at each of the stations. This methodology utilises the number of boarding and alighting passengers, the distance of origin/destinations from the station, and the location of the station. The passenger demand from an earlier Opening Year has been utilised to determine the potential cycle demand in the Opening Year, and in the Opening Year +5 Years.

This approach has informed the design and the number of cycle parking spaces provided at each station. Other factors such as the availability of land, potential future land uses and parking supply and the location of the station have also been taken into consideration by the design team in determining the quantum of cycle parking spaces provided. For the Collins Avenue Station, a total of 370 cycle spaces are proposed. Bicycle access and parking at the station will be provided along the Ballymun Road by the BusConnects project.

6.1.5 Road Safety

A Stage 1 Road Safety Audit has been undertaken for all of the proposed highway works for the Project. This is under a separate cover.

7. Summary

In Scenario A, Collins Avenue Station will facilitate approximately 15,900 passenger movements over the 12hr peak period (07:00-19:00) in 2035, rising to almost 18,500 passengers in 2050, and almost 21,000 passengers in 2065. In Scenario B, Collins Avenue Station will facilitate approximately 15,500 passenger movements over the 12hr peak period (07:00-19:00) in 2035 and will remain the same in 2050 and rising to almost 16,800 passengers in 2065.

The main catchment origins and destinations of the people boarding and alighting at the Collins Avenue Station will be:

- Origins from Willow Park residential area;
- Origins from Santry residential area;
- Destinations at Dublin City University; and,
- Destinations at the commercial land uses in Finglas East.

The Project will result in increases in public transport mode share of up to 10 percentage points for zones around Collins Avenue. There will be a reduction in road mode share of 5 percentage points in zones to both the east and west of the Project in this area, which is a reduction of approximately 470 car trips to and from the zones surrounding Collins Avenue, particularly at Dublin City University over the 12hr period in Scenario A 2065. In Scenario B 2065, there is a reduction of 250 car trips between the Do Minimum and Do Something scenarios. The Project will result in journey time savings of up to 25 minutes from Dublin City University to Swords Pavilion and Swords East. The station is also strategically positioned to facilitate interchange with the proposed Bus Network Redesign N4 Orbital Route.

The station will also provide for 370 cycle parking spaces. The results of the pedestrian comfort assessment show that in 2050, Glasnevin Avenue, Ballymun Road and St Pappin's Road will fall below DCC guidance, however they will have an 'Acceptable' pedestrian comfort level. In the 2065 AM peak hour, Glasnevin Avenue changes to 'Uncomfortable', while Ballymun Road South and St Pappin's Road have an 'Acceptable' comfort level. The reallocation of space on Glasnevin Avenue, combined with consideration to the placement of street furniture could improve comfort levels at this location.

In overall terms, the Collins Avenue station will provide for improvements to the public transport network resulting in decreases in private car usage/trips, increases in public transport usages and will facilitate walking and cycling to the station, without significantly impacting on the operation of the road network in the area.

Appendix A. Traffic Flow Diagrams

Base Flows

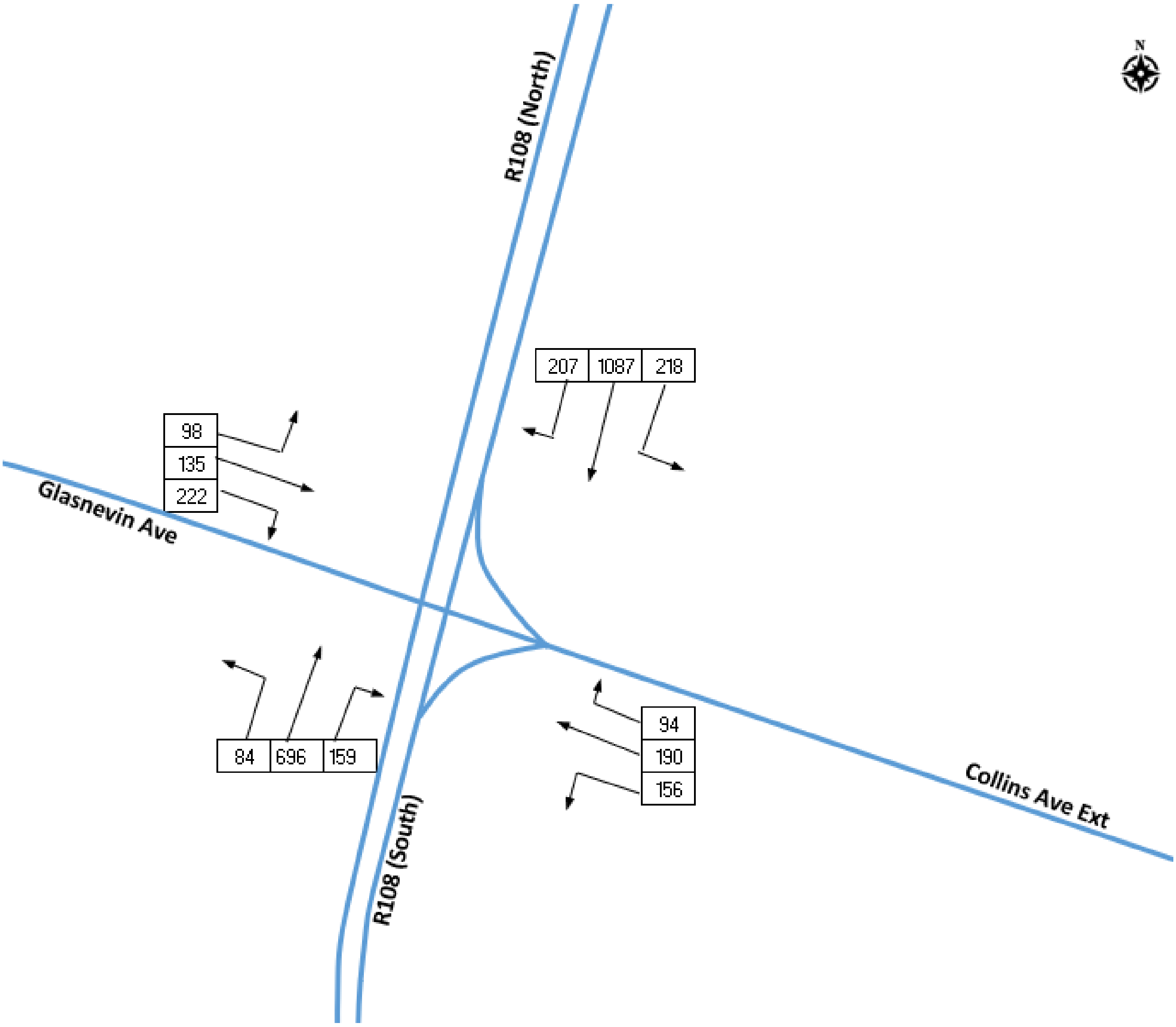


Figure 7.1: R108 Ballymun Rd / R103 Glasnevin Ave AM 2018 Baseline Flows

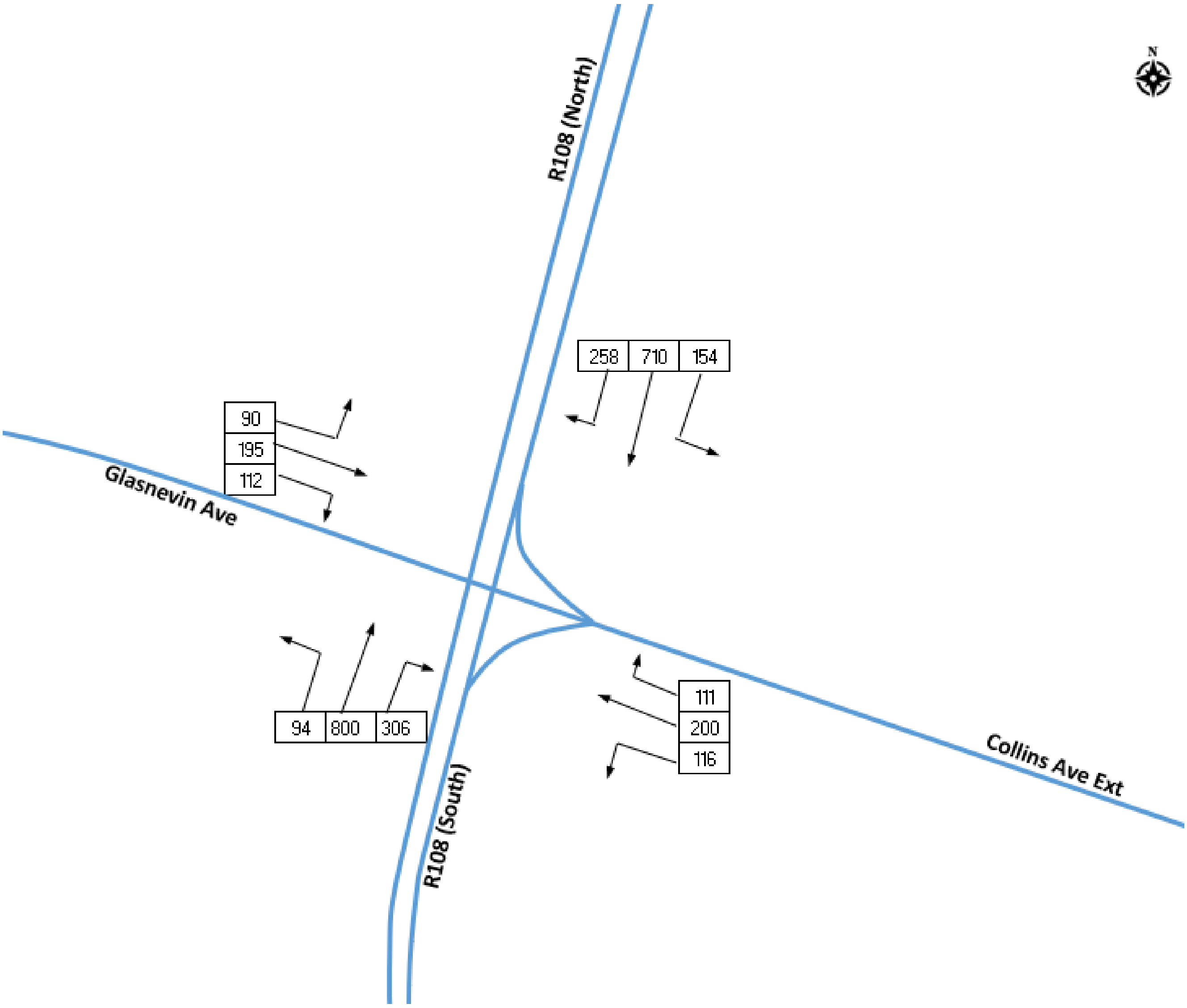


Figure 7.2: R108 Ballymun Rd / R103 Glasnevin Ave PM 2018 Baseline Flows

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Contents

1. Introduction

1.1 Background

Jacobs/IDOM has been commissioned to undertake the Environmental Impact Assessment Report (EIAR) in support of the proposed Dublin MetroLink project (hereafter referred to as the proposed Project). The EIAR is being prepared to assess the environmental impacts of the proposed Project, including in relation to traffic and transport.

This Traffic and Transportation Assessment (TTA) assesses the operational impacts associated with the proposed Griffith Park Station on the traffic and transport network in the local area. TTA's have been prepared for each individual station as well as an overall TTA for the proposed Project.

Jacobs/IDOM has also been commissioned to undertake a scheme traffic management plan (STMP). The STMP is a standalone report within the EIAR. The STMP assesses the impact of the construction of the Project on all road users and proposes mitigation measures where appropriate.

A summary of the TTAs and STMP will be included within the Traffic and Transportation chapter of the EIAR.

1.2 Assessment Scenarios

In order to provide a rounded assessment of the proposed Project, its impacts have been reviewed for a range of future years, and in the context of two alternative future scenarios. The forecast years are 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). As outlined in Table 1.1, Scenario A includes the proposed Project and committed transport schemes only, while Scenario B includes a range of further planned schemes depending on the forecast year.

Table 1.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project.
Do Minimum Scenario	Committed transport schemes in the absence of the Project.
Do Something - Scenario A	Scenario with the Project and committed transport schemes only.
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for Opening year (2035) and planned schemes under the Transport Strategy for the GDA for the Design Year (2050) and the Forecast Year (2065).

Committed transport schemes in the Do Minimum scenario and in Scenario A, that have been progressed through planning and are either under construction or are programmed into the capital expenditure budget, include, but are not limited to:

- Luas Green Line Capacity Enhancement – Phase 1;
- BusConnects Dublin Area Bus Network Redesign; and
- BusConnects Fares and Ticketing.

Scenario B represents the likely future receiving environment and is based on the delivery of the schemes identified within the National Development Plan for 2035, and on the implementation of the NTA's Greater Dublin Area (GDA) Transport Strategy for 2050 and 2065. As such, this scenario considers the cumulative impacts of interactions between other projects that are most likely to impact on transport movements in the area. Schemes included in this scenario are, but are not limited to:

- Luas Green Line Capacity Enhancement - Phase 2;
- Luas Finglas;
- Luas Lucan;
- BusConnects Core Bus Corridors; and
- DART+.

More information on each modelled scenario is available in the Transport Modelling Plan (Appendix A9.3).

1.3 Project Overview

The proposed Project will be a high-capacity, high frequency rail line running from Swords to Charlemont, linking Dublin Airport, Irish Rail, the Dublin Area Rapid Transit (DART), Dublin Bus and Luas services, improving integration across public transport network in the Greater Dublin Area (GDA).

As well as linking major transport hubs, the proposed Project will connect key destinations including Swords, Ballymun, the Mater Hospital, the Rotunda, Dublin City University and Trinity College with much of the 19-kilometre route running underground.

When operations commence, there will be trains every 3 minutes during peak periods. This can rise to a service every 90 seconds, with the system capable of carrying a peak line flow of 20,000 passengers per hour in each direction.

1.3.1 Griffith Park Station

The proposed Griffith Park Station is shown in Figure 1.1. The Griffith Park Station will be located under the Home Farm Football Club (FC) grounds on the east side of the R108 St Mobhi Road. In this area, the R108 has three carriageways, one northbound and two southbound.

There will be one entrance to this station, located at the southern end of the pitches, off the existing entrance to the Whitehall College of Further Education. The station will be provided with a bike parking area near to the main entrance of the station.

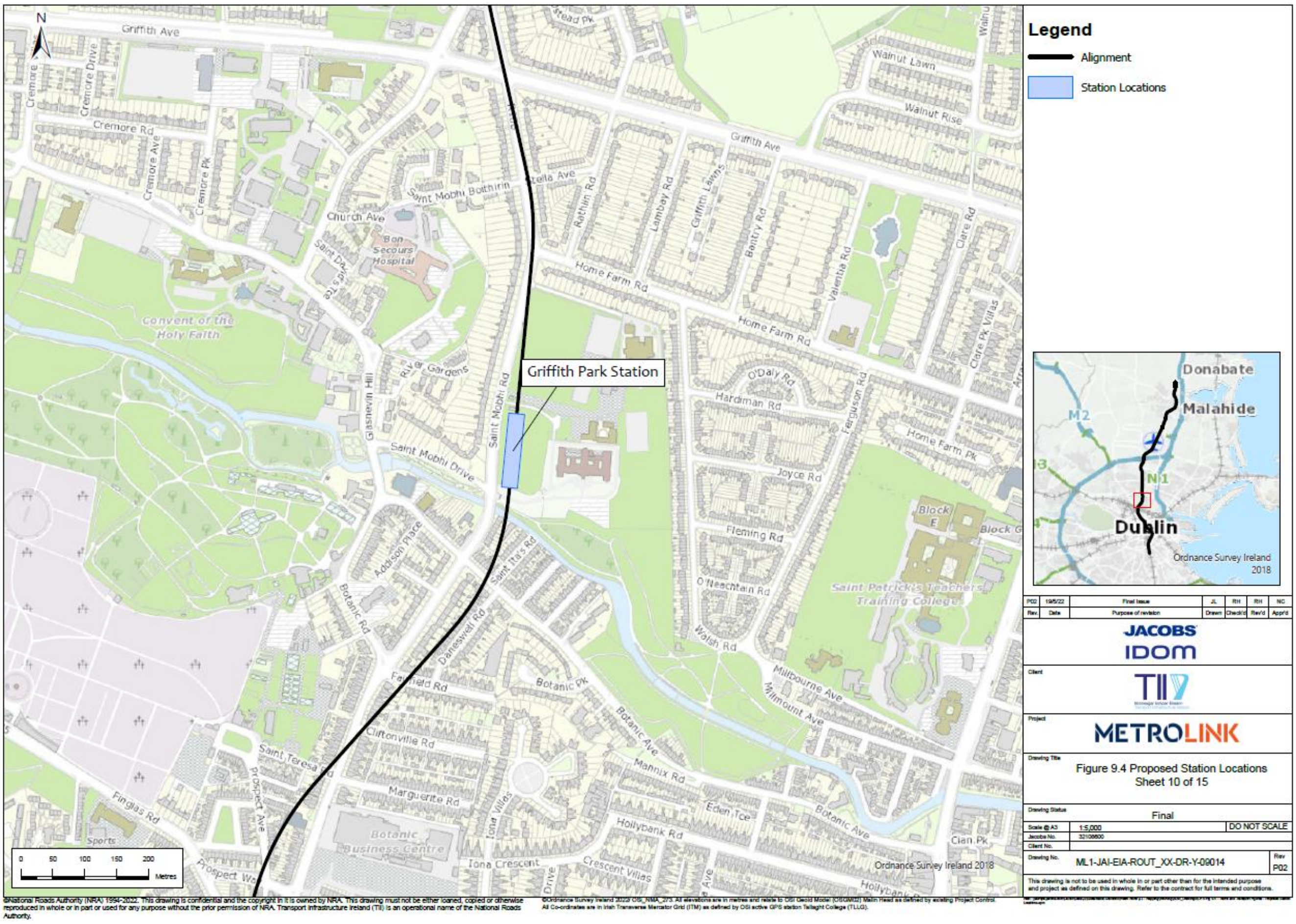


Figure 1.1: Proposed Station Location at Griffith Park Station

2. Policy Context

Reference should be made to the Chapter 3 of the Overall Project TTA and Planning Policy Report (ML1-JAI-PLD-ROUT_XX-RP-Y-00020) for further detail on the overall project in relation to key national and regional policies.

The proposed Griffith Park Station does not lie within any local area plan or masterplan lands.

The National Spatial Strategy states that in order to promote sustainable development, it is essential to consolidate the physical growth of Dublin City. This should be supported by effective land use policies for the urban area which underpin increased investment in high quality public transport infrastructure. It outlines a number of requirements that are key to creating a compact and economically vibrant city including:

- The effective integration of land use and transportation policy: and
- Facilitating the movement of people and goods through an effective public transport system.

The Regional Planning Guidelines promote the consolidation of development within the metropolitan area, and the achievement of sustainable densities in tandem with a much-enhanced multi-modal transport system.

The Transport Strategy for the Greater Dublin Area 2016-2035 and the Regional Planning Guidelines are required under legislation to be consistent with each other, and therefore the purpose of the Strategy is "to contribute to the economic, social and cultural progress of the Greater Dublin Area by providing for the efficient, effective and sustainable movement of people and goods." The Strategy sets out the necessary transport provision for the period up to 2035, to achieve this objective for the region, including the provision of the Project.

2.1 Dublin City Council Development Plan (2016-2022)

The overarching theme of the local policy regarding movement is "helping to build an integrated transport network and encouraging the provision of greater choice of public transport and active travel."[1]

Based on review of the Dublin City Council Development Plan (2016 – 2022) it is the Policy of Dublin City Council (DCC):

SC19: To promote the development of a network of active, attractive and safe streets and public spaces which are memorable, and include, where appropriate, seating, and which encourage walking as the preferred means of movement between buildings and activities in the city. In the case of pedestrian movement within major developments, the creation of a public street is preferable to an enclosed arcade or other passageway.

SC20: To promote the development of high-quality streets and public spaces which are accessible and inclusive, and which deliver vibrant, attractive, accessible and safe places and meet the needs of the city's diverse communities.

MT2: Whilst having regard to the necessity for private car usage and the economic benefit to the city centre retail core as well as the city and national economy, to continue to promote modal shift from private car use towards increased use of more sustainable forms of transport such as walking, cycling and public transport, and to co-operate with the National Transport Authority (NTA), Transport Infrastructure Ireland (TII) and other transport agencies in progressing an integrated set of transport objectives. Initiatives contained in the government's 'Smarter Travel' document and in the NTA's draft transport strategy are key elements of this approach.

[1] Dublin City council - Dublin City Development Plan 2016–2022: Written Statement; Section 1.2 (e)

MT3: To support and facilitate the development of an integrated public transport network with efficient interchange between transport modes, serving the existing and future needs of the city in association with relevant transport providers, agencies and stakeholders.

MT4: To promote and facilitate the provision of Metro, all heavy elements of the DART Expansion Programme including DART Underground (rail interconnector), the electrification of existing lines, the expansion of Luas, and improvements to the bus network in order to achieve strategic transport objectives.

MT5: To work with the relevant transport providers, agencies and stakeholders to facilitate the integration of active travel (walking, cycling etc.) with public transport, thereby making it easier for people to access and use the public transport system.

MT6: (i) To work with Iarnród Eireann, the NTA, Transport Infrastructure Ireland (TII) and other operators to progress a coordinated approach to improving the rail network, integrated with other public transport modes to ensure maximum public benefit and promoting sustainable transport and improved connectivity. (ii) To facilitate the needs of freight transport in accordance with the National Transport Authority's Transport Strategy for the Greater Dublin Area 2016 – 2035.

MT7: To improve the city's environment for walking and cycling through the implementation of improvements to thoroughfares and junctions and also through the development of new and safe routes, including the provision of foot and cycle bridges. Routes within the network will be planned in conjunction with green infrastructure objectives and on foot of (inter alia) the NTA's Cycle Network Plan for the Greater Dublin Area, and the National Cycle Manual, having regard to policy GI5 and objective GIO18.

MT8: To work with, and actively promote, initiatives by relevant agencies and stakeholders such as An Taisce's 'Green Schools' initiative and the NTA's Smarter Travel Unit, to promote active travel in schools and communities, recognising the health and social benefits of walking and cycling as well as the environmental benefits.

MT9: To promote Bike and Ride at public transport hubs by providing secure, dry, bike parking facilities.

MT10: To provide 30kph speed limits and traffic calmed areas at appropriate locations throughout the city and subject to stakeholder consultation.

MT11: To continue to promote improved permeability for both cyclists and pedestrians in existing urban areas in line with the National Transport Authority's document 'Permeability – a best practice guide'. Also, to carry out a permeability and accessibility study of appropriate areas in the vicinity of all Luas, rail and BRT routes and stations, in co-operation with Transport Infrastructure Ireland and the National Transport Authority.

2.2 Draft Dublin City Council Development Plan (2022-2028)

Building on the objectives of the Dublin City Council Development Plan 2016-2022, the Draft Dublin City Council Development Plan 2022-2028 recognises the opportunities presented by MetroLink to achieve effective integration of land-use and transportation in the area.

SMT20: Key Sustainable Transport Projects:

- To support the expeditious delivery of key sustainable transport projects including MetroLink, BusConnects, DART+ and Luas Expansion Programme so as to provide an integrated public transport network with efficient interchange between transport modes, serving the existing and future needs of the city and region.

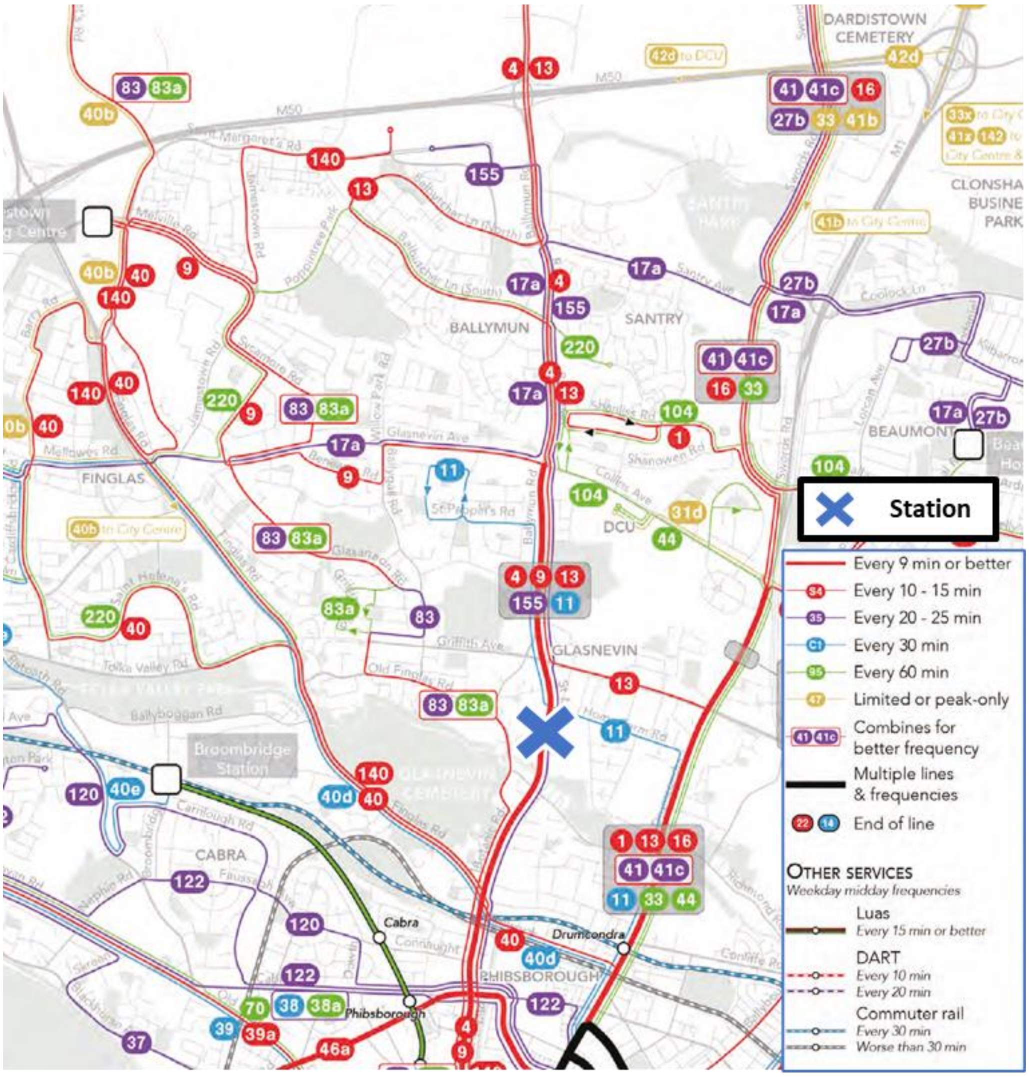
In addition, the Draft Plan highlights the role the proposed Project will play in delivering opportunities for developing the public ream around proposed stations.

3. Baseline Conditions

This section describes the existing receiving environment within the vicinity of the Griffith Park Station and the wider environs, and identifies the future receiving environment for all modes of transport if conditions are planned to change in advance of the construction of the Project, such as the delivery of other proposed infrastructure projects.

3.1 Existing Public Transport Network

As shown in Figure 3.1, the area surrounding the Griffith Park Station is served by several bus services with less than 15 min frequencies, with a number of bus stops located in close proximity to the proposed station. Within a 600m buffer from the station there are more than 12 bus stops located along the R108, Home Farm Road and Glasnevin Hill (Figure 3.2). The nearest bus stop is at the southeast of the station with routes 4 (Monkstown Avenue to Harristown), 9 (Charlestown Shopping Centre to Greenhills College) and 155 (Ballymun to Bray) serving that location. Other bus routes within this buffer include route 11, 83 and 83a.



(Base Source: www.busconnects.ie)

Figure 3.1: Existing bus network around Griffith Park Station

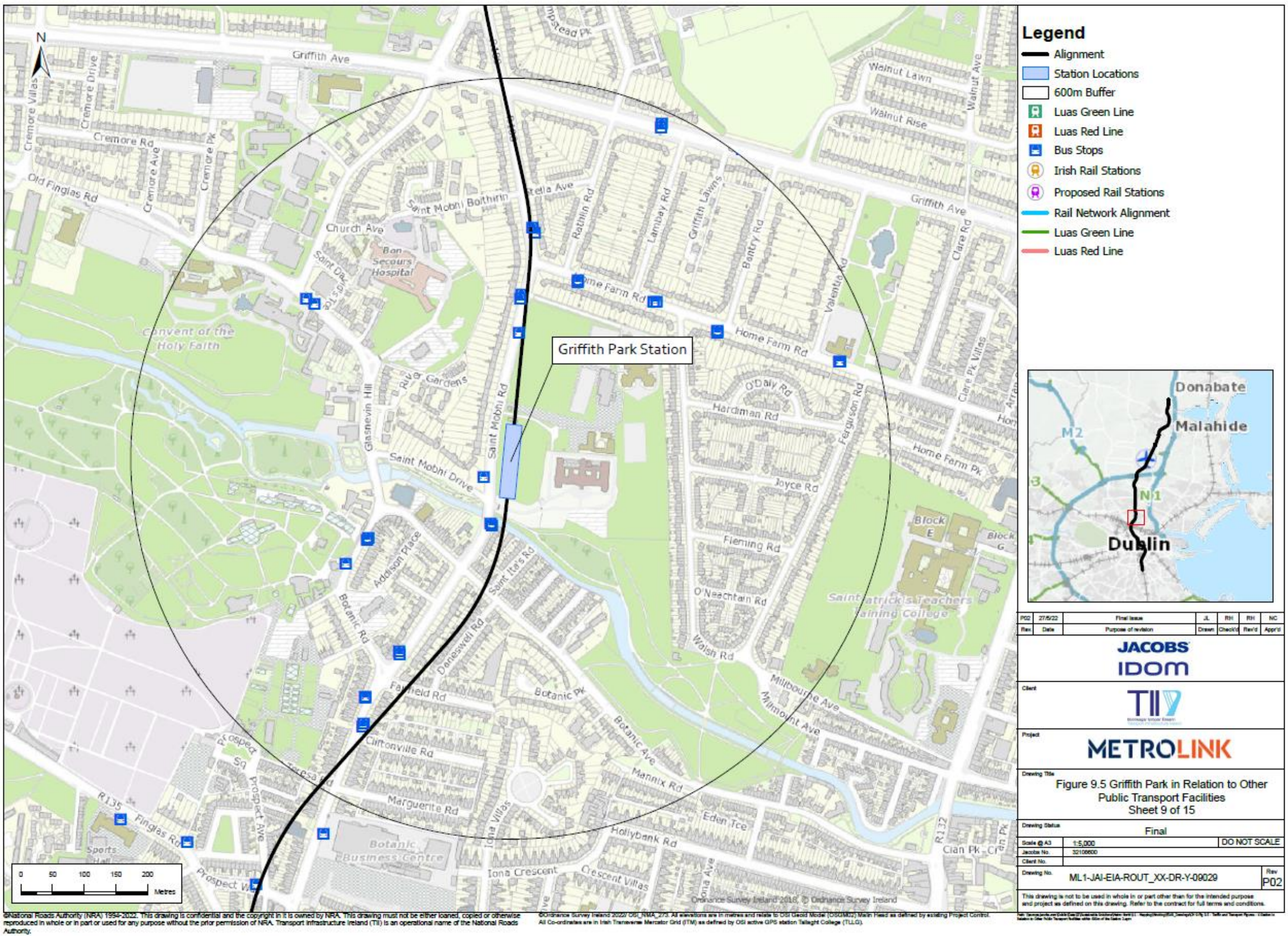
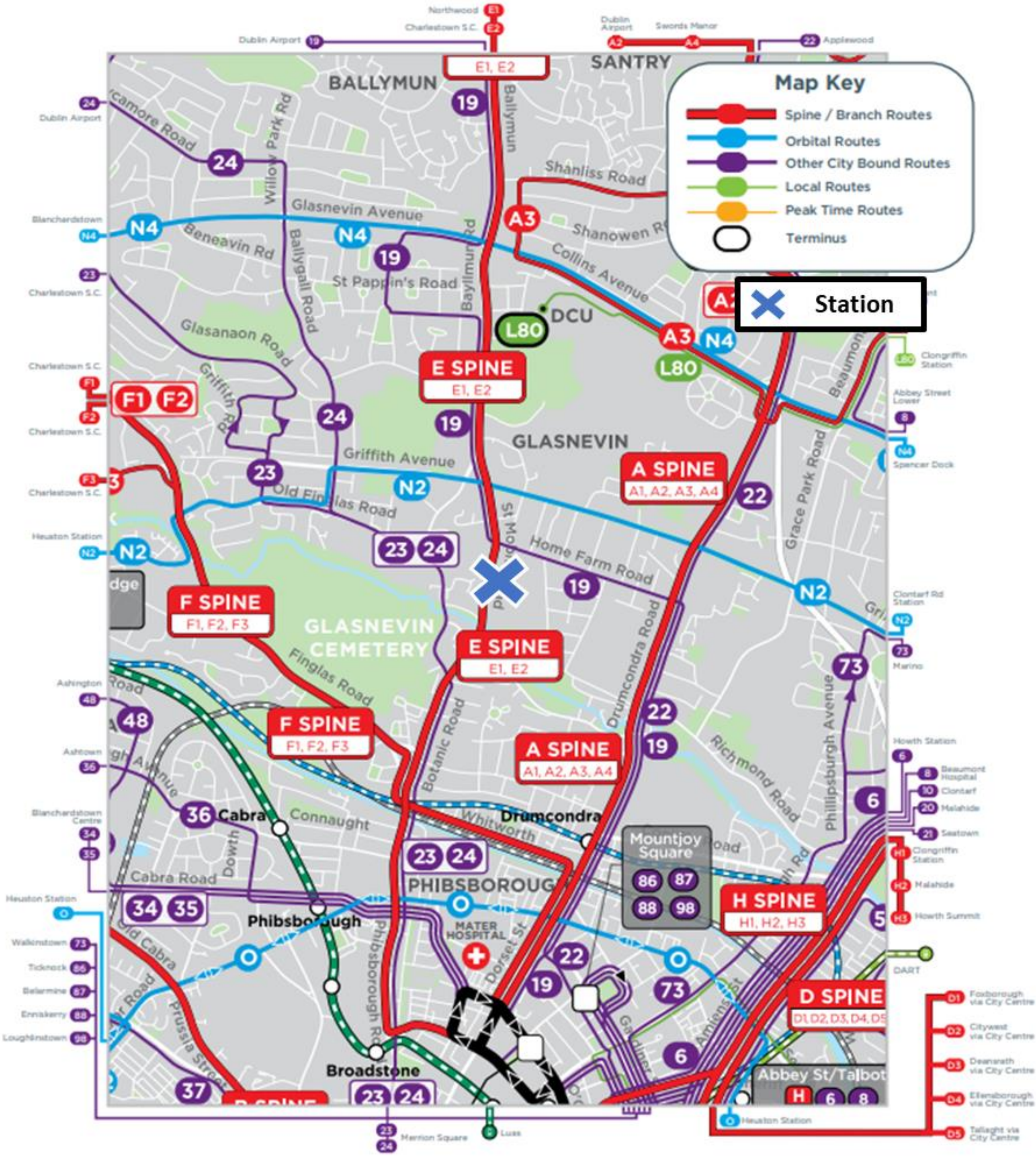


Figure 3.2: Transport facilities within a 600m buffer

3.2 Future Receiving Environment -Public Transport Network

The Griffith Park Station is also located along the Bus Network Redesign proposed E Spine as shown in Figure 3.3 and in close proximity to orbital route N2. Routes E1 and E2 will have frequencies of 8-10 mins on weekdays giving Spine E a combined frequency of 5min during weekdays. The N2 orbital route will have a frequency of 10 min during weekdays and 15 min during weekends. Other City Bound route 19 serves Home Farm Road, while Other City Bound routes 23 and 24 will also serve Botanic Road to the south of the proposed station.



(Base Source: www.busconnects.ie)

Figure 3.3: Proposed Bus Network Redesign around Griffith Park Station

3.3 Existing Road Network

As shown in Figure 3.4 the proposed Griffith Park Station is located on the eastern side of the R108 Ballymun Road. It is situated 4km south of the M50 Junction 4 and approximately 1km west of the N1. The regional road network in the vicinity of the station comprises of the R102 Griffith Avenue, a two-way single carriageway road to the north of the proposed station. The majority of roads within the surrounding area of the station serve residential areas.

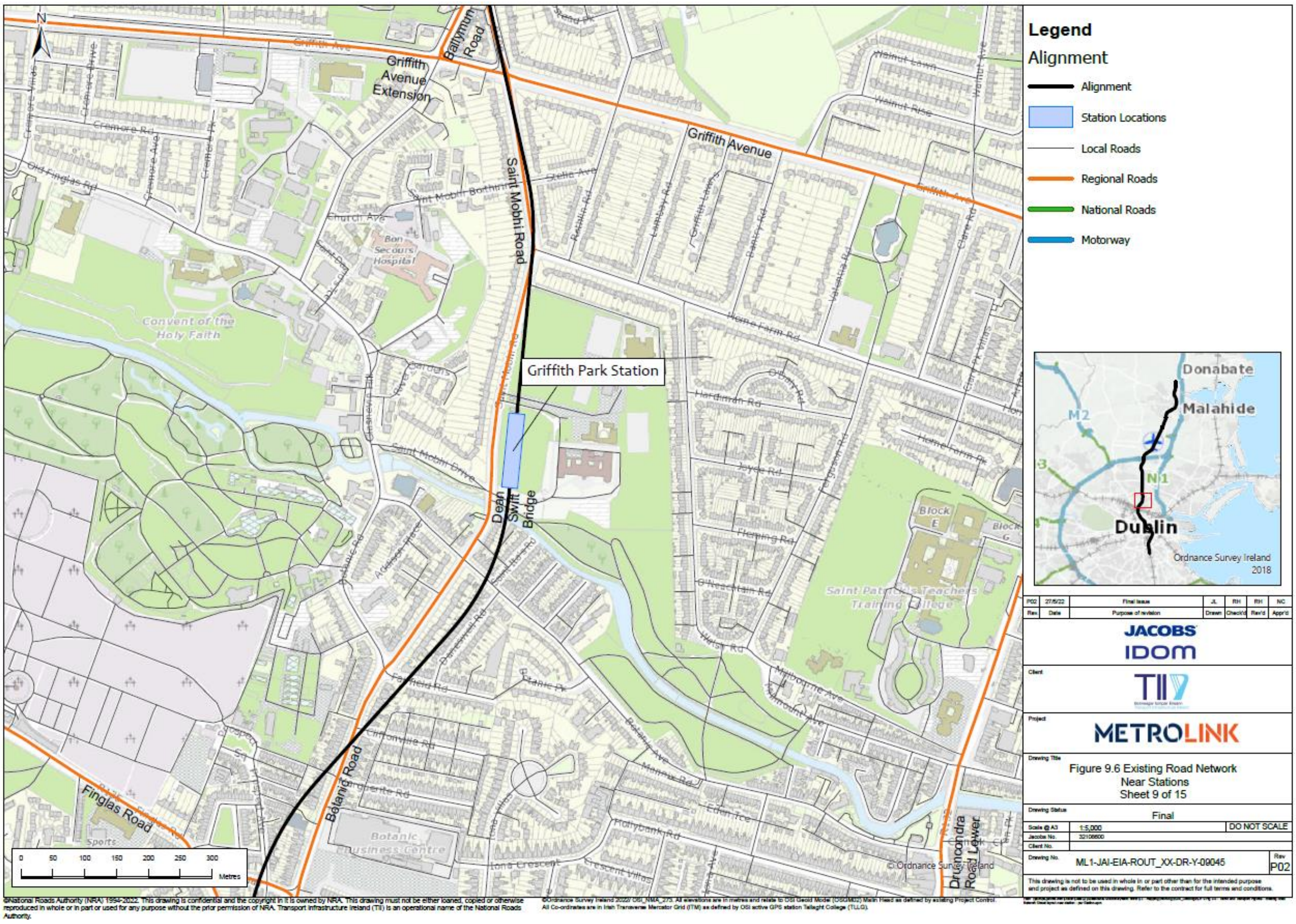


Figure 3.4: Street layout near Griffith Park Station

Along the section in the proximity of the station, the R108 is a two-way single carriageway with a width of approximately 9m. It has two traffic lanes on each direction and on bus lane for the southbound. St. Mobhi Drive is a two-way single carriageway of approximately 6m width. The road has no bus lanes and one traffic lane per direction, one of which is frequently occupied by on-street parking

3.3.1 Junction Turning Count Locations

The Data Collection Report (ML1-JAI-TRA-ROUT_XX-RP-Y-00023) details the methodology and specification of traffic surveys undertaken for the proposed Project. The survey locations relevant to Griffith Park Station are shown in Table 3.1. Vehicle classifications used for the survey were Car, LGV, OGV1, OGV2, PSV, Motorcycle and Pedal Cycle. PCUs values were also reported using appropriate conversion factors for each vehicle classification. The resulting PCU values from the survey results have been used for the LinSig modelling.

Table 3.1: Survey Locations around Griffith Park Station

Junction	Type of Survey
R103 Glasnevin Avenue / Collins Avenue Extension	Classified Junction Turning Count (CJTC)
Ballymun Road / Albert College Drive Roundabout	CJTC
Saint Mobhi Road / Home Farm Road	CJTC

3.3.2 Forecast Traffic Growth

Forecast traffic growth rates have been obtained from the Eastern Regional Model (ERM) for future years 2035, 2050, and 2065, for the appropriate scenario.

3.4 Future Receiving Environment – Road Network

As part of the Bus Connects Core Bus Corridor proposals on R108 Ballymun Road, it is proposed to retain the existing number of general traffic lanes and to provide an additional bus lane and segregated cycle track on the outbound arm. On the inbound arm of the one-way system along St. Mobhi Road Upper, it is proposed to reduce the number of general traffic lanes from three to two which will allow for the accommodation of a bus lane.

On the Griffith Avenue arm of the one-way traffic system, it is proposed to convert one existing traffic lane to a bus lane which will avoid the need for road widening and removal of all existing trees. A contra-flow cycle track will be provided in the eastbound direction along this section of road to avoid the need for cyclists to follow the one-way system around the central island.

For northbound through traffic, a bus gate is proposed at St Mobhi Road/Griffith Avenue junction which will direct traffic westward along Glasnevin Hill, Old Finglas Road, Cremore Villas and Griffith Avenue to re-join Ballymun Road.

3.5 Existing Pedestrian Network

On the southbound side of Saint Mobhi Road, there is a shared footway/cycle lane approximately 2m wide in total. Northbound there is a pedestrian footway approximately 2.3m wide, with an additional 2m allocated to grass verges between the footpath and the traffic lanes. There is a signalized pedestrian crossing present north of the proposed station at Home Farm Road, with dropped kerbs and tactile paving. A toucan crossing is also present to the south of the proposed station at St Mobhi Drive, with dropped kerbs and tactile paving.

3.5.1 Pedestrian Link Counts

The Data Collection Report (ML1-JAI-TRA-ROUT_XX-RP-Y-00023) details the locations around Griffith Park Station where pedestrian surveys were undertaken.

3.5.2 Baseline Pedestrian Accessibility Review

A baseline accessibility assessment has been undertaken to establish existing walking provision relevant to the proposed Griffith Park Station. Catchment maps prepared for the accessibility analysis for walking are based in two criteria, the average speed for each mode and the existing road network. Therefore, maps do not reflect existing access restrictions for private roads and motorised roads.

Figure 3.5 illustrates a 5min walking, 10min walking and 15min walking catchment from the Griffith Park Station. Table 3.2 below lists local amenities within the 5min walking, 10min walking and 15min walking from the Griffith Park Station.

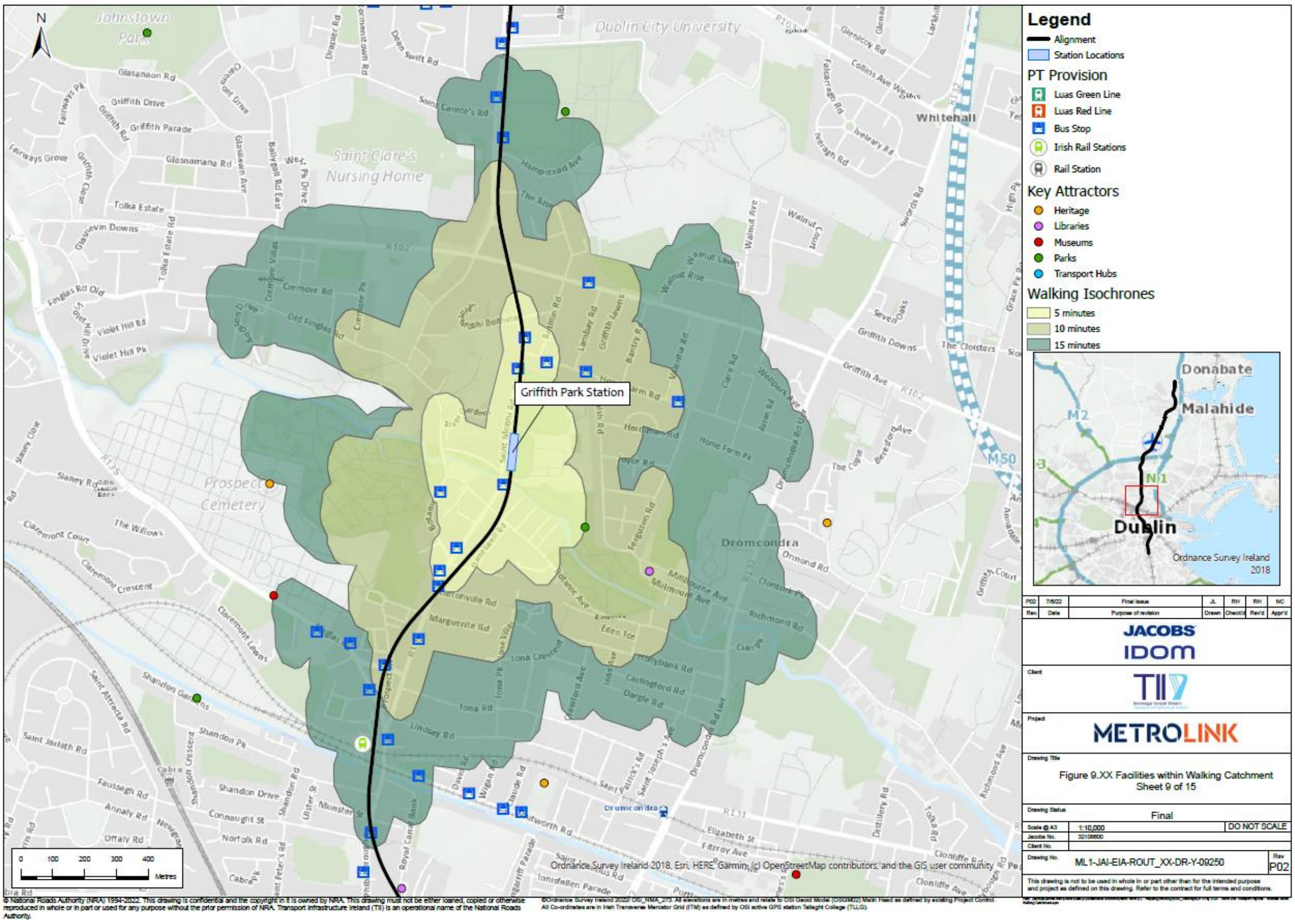


Figure 3.5: Griffith Park Station Walking Catchment Area

Table 3.2: Local facilities and amenities within walking catchment area

Facilities within 5min walking	Facilities within 10min walking	Facilities within 15min walking
Glasnevin National School	Bon Secours Hospital Dublin	Dublin City University (DCU)
Scoil Mobhi	St. Mary's Secondary School	DCU St. Patrick's Campus
Whitehall College of Further Education Griffith Park	Glasnevin Educate Together National School	Drumcondra Village Medical Centre
GLG Na Fianna (Sports Complex)	Scoil Chaitriona	St Columbas National School
	National Botanic Gardens	Glasnevin Lawn Tennis Club
	Griffith Park	Shelbourne Football Club

A pedestrian comfort assessment has been undertaken to assess the baseline volume of passengers on the network surrounding Griffith Park, as shown in Figure 3.6. Links were assessed against DCC guidance in the first instance, and then against the TfL Pedestrian Comfort Calculator to determine the level of comfort for the available width. The full methodology adopted is detailed in the Overall Project TTA.

Footway widths were evaluated in the immediate surrounding to the proposed station, the assessment shows that all the links currently comply with the DCC standards and are deemed 'Comfortable'.

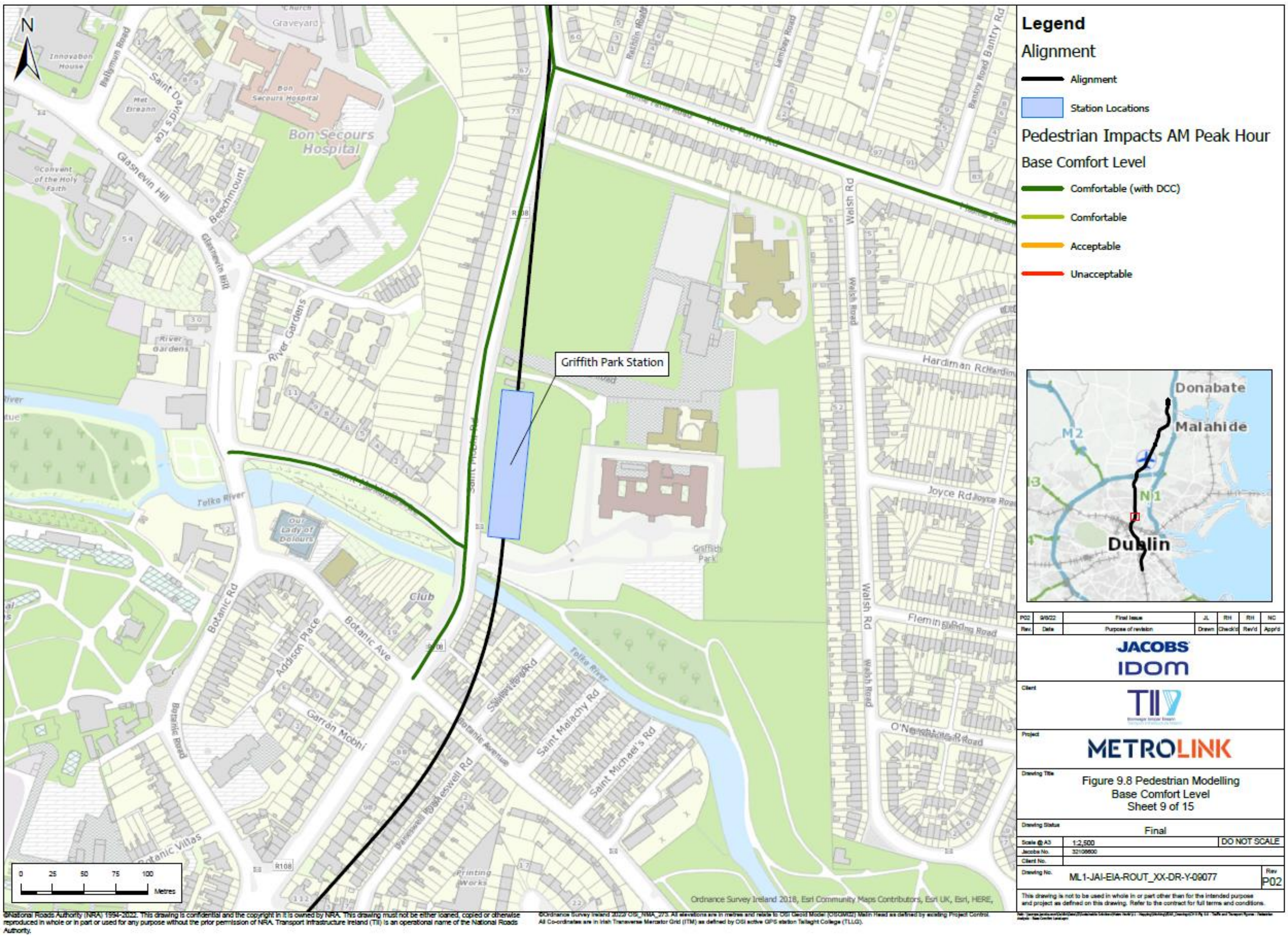


Figure 3.6: Pedestrian Comfort Assessment at Griffith Park Station- Baseline

3.6 Future Receiving Environment – Pedestrian Network

As part of the Bus Connects Core Bus Corridor proposals, the pedestrian footways along the R108 St Mobhi Road in the vicinity of Griffith Park Station will be narrowed to allow for additional cycle tracks to be provided behind the existing trees.

3.7 Existing Cycle Network

Figure 3.7 illustrates Griffith Park Station within the GDA Cycle Network. The R108 is considered a primary route within the network, and there is a nearby Secondary and Feeder route.

The cycle network in the vicinity of Griffith Park Station consists mostly of high sensitivity links with Level C Quality of Service, with the exception of Dublin Industrial Estate which is an area of low sensitivity for cyclists. A number of shared use paths are present in the area; however they are often interrupted and broken routes.

Advisory cycle lanes are present along Glasnevin Hill Road however no designated cycling infrastructure is present along St Mobhi Road.

Slaney Road provides no cycling infrastructure. At the Slaney Road and R135 intersection, cyclists can join a segregated shared use path before joining Glasnevin Hill Road at the Botanic Gardens.

Cyclists travelling southbound on St Mobhi Road use the shared bus lane before joining the off-road shared use footpath/cycle lane at Home Farm Road. Travelling northbound, there is an off-road cycle lane as far as St Mobhi Drive, where a toucan crossing is present to facilitate crossing over to the shared footway/cycle lane on the southbound side of St Mobhi Road.

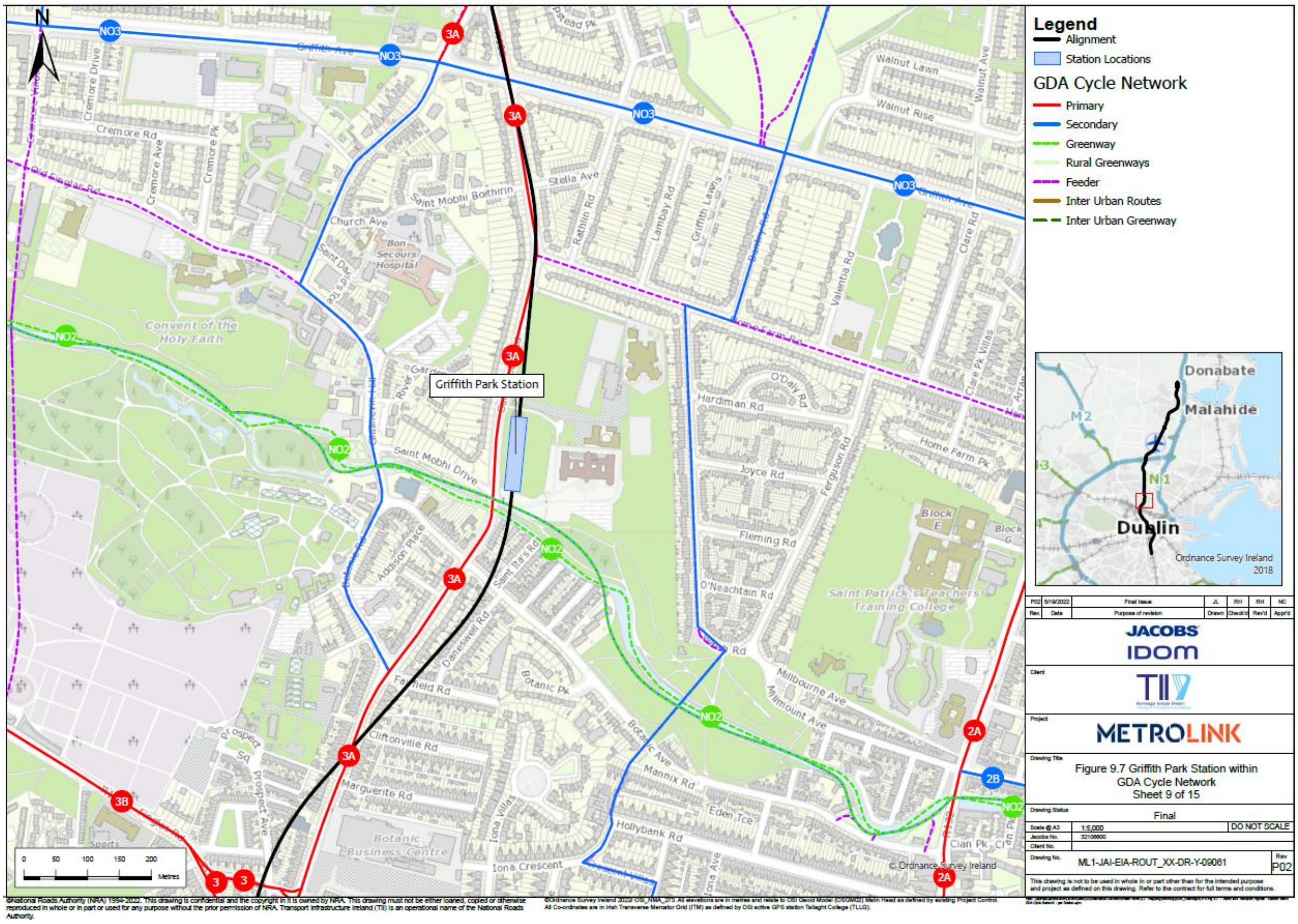


Figure 3.7: Proposed Griffith Park Station within GDA Cycle Network

3.7.1 Baseline Cycle Accessibility Review

A baseline accessibility assessment has been undertaken to establish existing cycling provision relevant to the proposed Griffith Park Station. Catchment maps prepared for the accessibility analysis for cycling are based in two criteria, the average speed for each mode and the existing road network. Therefore, maps do not reflect existing access restrictions for private roads and motorised roads.

Figure 3.8 illustrates a 5 min cycling and 10 min cycling catchment from the Griffith Park Station and the location of existing bike racks and Dublin Bike stations in close proximity to the station.

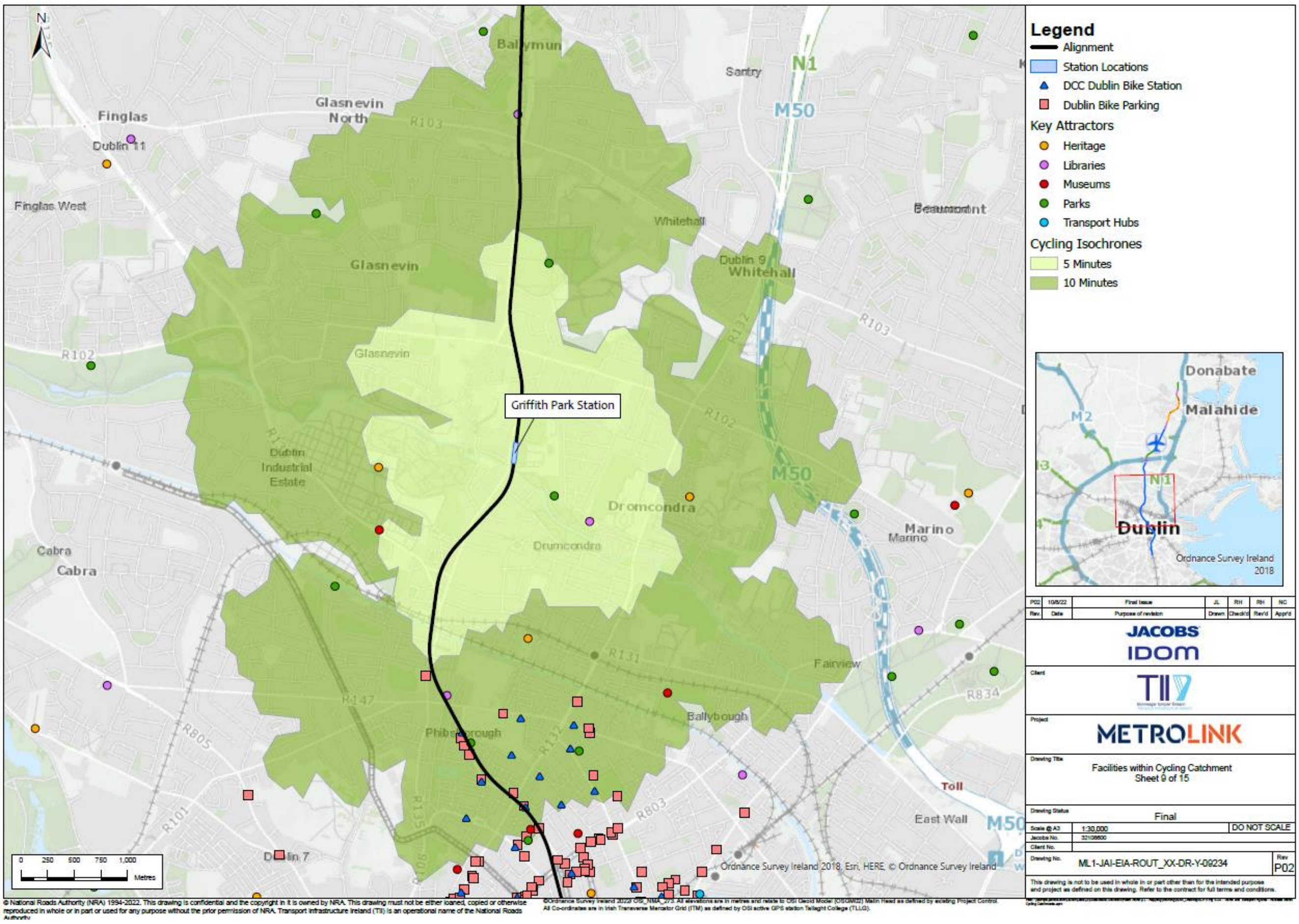


Figure 3.8: Griffith Park Station Cycling Catchment Area

Table 3.3 presents the local facilities and amenities within the 5min and 10min cycling catchment area of Griffith Park Station.

Table 3.3: Local facilities and amenities within cycling catchment area

Facilities within 5min cycling	Facilities within 10min cycling
Dublin City University (DCU)	Ballymun Library
DCU St. Patrick's Campus	Trinity Comprehensive Secondary School
Drumcondra Village Medical Centre	Scoil an Tseachtar Laoch
St Columba's National School	St. Kevin's College
Glasnevin Lawn Tennis Club	The Cremore Clinic
Shelbourne Football Club	Hampstead Private Hospital
	Glasnevin Cemetery
	National Botanic Gardens
	Mount Bernard Park
	Tesco Shopping Centre
	Mater Hospital
	Temple Street Children's Hospital

Facilities within 5min cycling	Facilities within 10min cycling
	Croke Park
	St. Vincent's Hospital

3.8 Future Receiving Environment – Cycle Network

The current cycle infrastructure will be upgraded to a two-way cycle lane on the southbound side of St Mobhi Road as part of the Bus Connects Core Bus Corridor proposals on St Mobhi Road.

4. The Proposed Project – Griffith Park Station

4.1 Site Location and Development Context

The proposed Griffith Park Station, as shown in Figure 4.1 is located just off the R108, approximately 4km south of the M50 Junction 4. A large proportion of the station site is located within the grounds of the Whitehall College of Further Education. The station serves a number of land-uses from residential to education and retail. The main residential areas are situated to the west of the station, while the retail and educational areas are situated to the east and south of the station. The National Botanic Gardens, a key city attraction, is located around 500m south-west of the station, and just further northwest is the Bon Secour hospital.

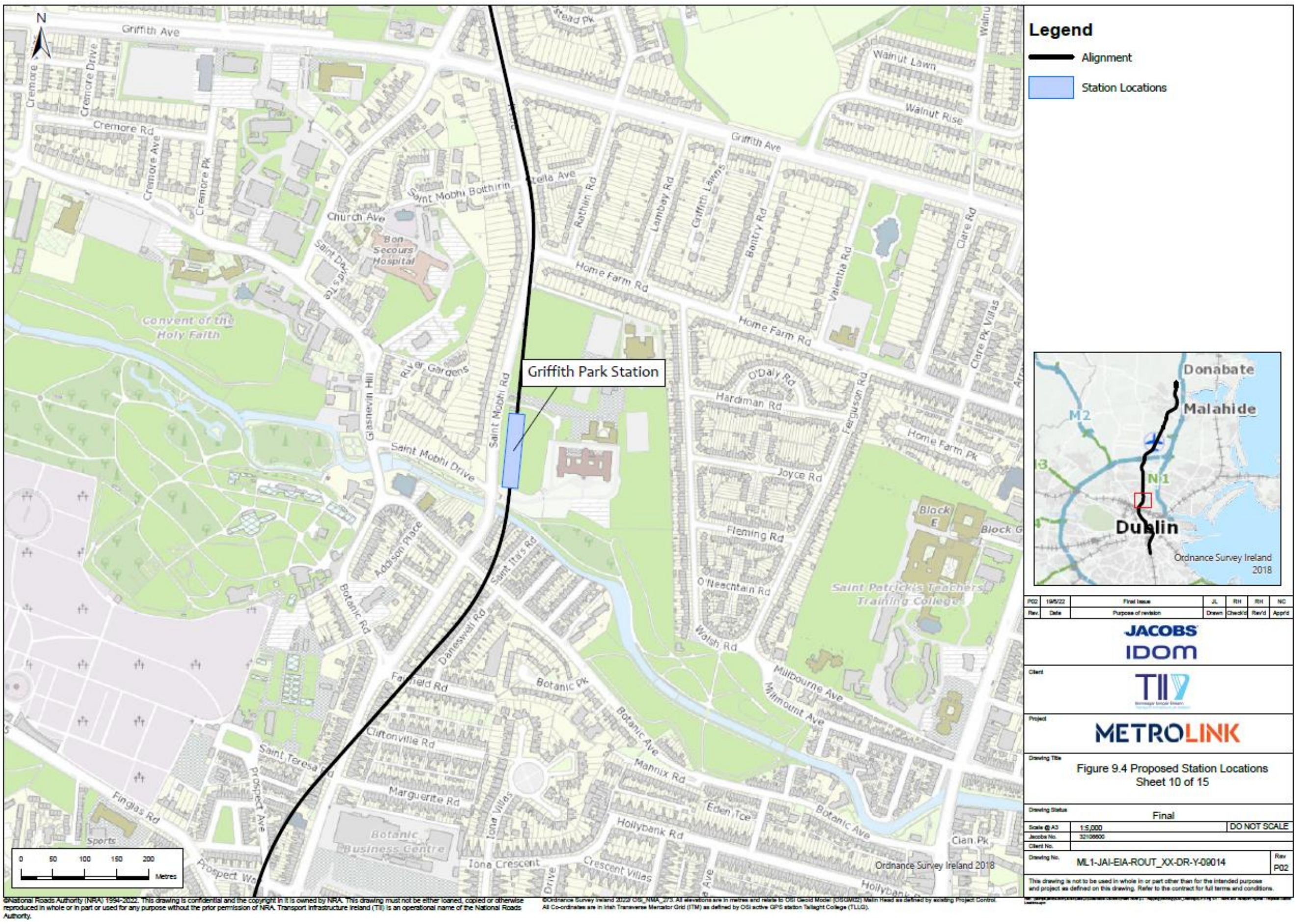


Figure 4.1: Proposed Site Location

Figure 4.2 illustrates the proposed layout for Griffith Park Station including the location of entrances and exits. The station entrance and exit will be located at the south of the station, off the R108 at the Whitehall College entrance and will also be accessible from the pedestrian footway and cycleway on the R108.

There is no vehicular parking provision proposed at Griffith Park Station, however in order to facilitate the movement of passengers from the surrounding catchment, 176 bicycle parking spaces will be provided at Griffith Park Station. A segregated two-way cycle lane is provided on the east side of the R108 at the station extents in order to facilitate access from the R108 St Mobhi Road to the station cycle parking, which is located on the southern extents of the station and can be access directly from the R108. A toucan crossing is provided on the R108 (N) arm of the R108 St Mobhi Road / St Mobhi Drive signalised junction in order to facilitate safe access for northbound cyclists on the west side of the R108 St Mobhi Road.

The existing bus stop present on the northbound carriageway of the R108 is located in close proximity to the proposed station access. There is also a bus stop present on the southbound carriageway just south of the station entrance.

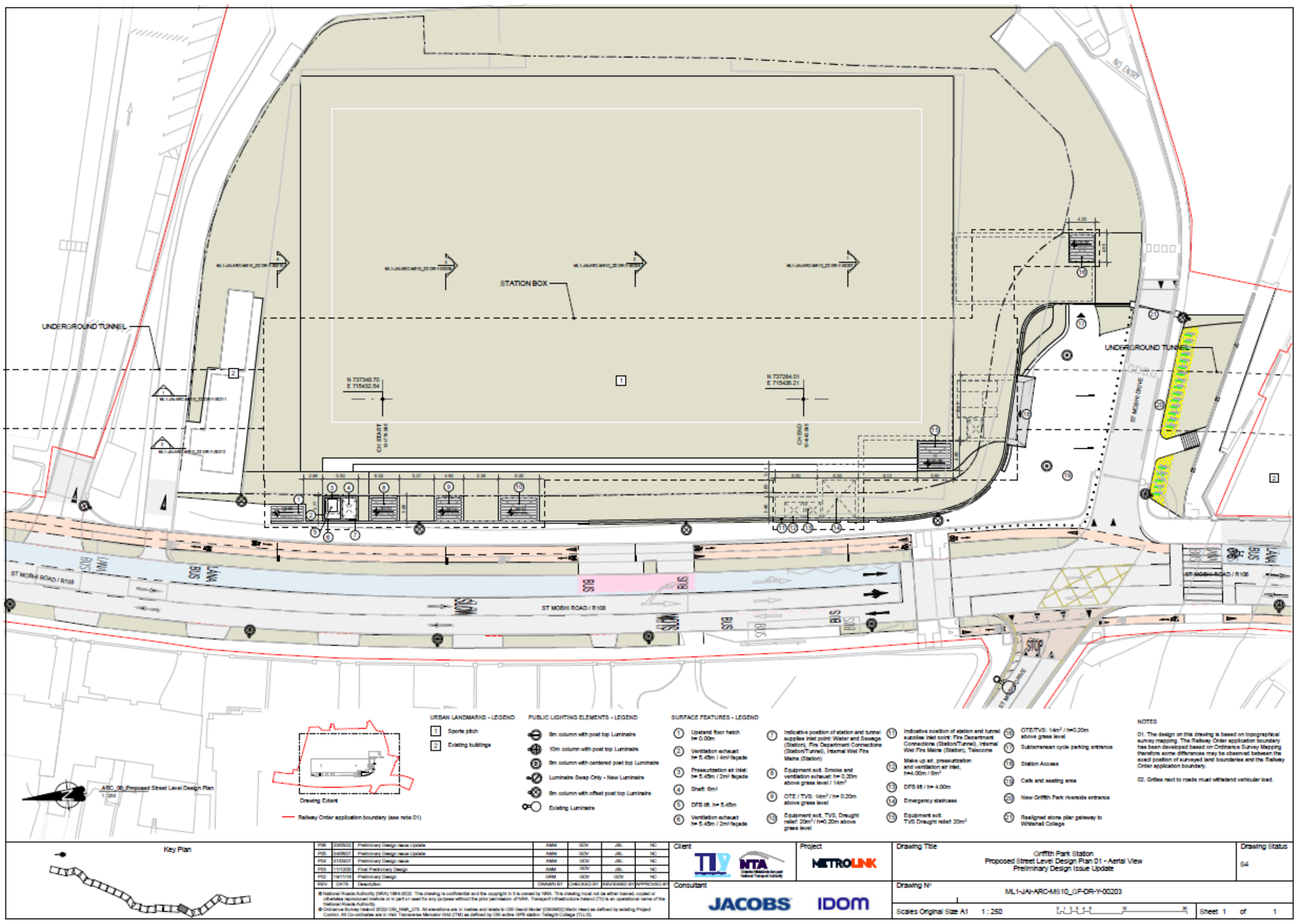


Figure 4.2: Griffith Park Station Layout

5. Trip Generation/Attraction

5.1 Operational Phase

Traffic estimates associated with the Griffith Park Station Operational Phase has been established by utilising the National Transport Authority's (NTA) East Regional Model (ERM). The ERM provides a comprehensive representation of multi-modal travel patterns across the Greater Dublin Area and is a suitable tool for the testing and appraisal of the proposed Project.

5.1.1 Passenger Boarding and Alighting

Passenger demand modelling has been used to predict the numbers of passengers boarding and alighting at each station, and the resulting passenger load on MetroLink vehicles, for the years 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). The scenarios considered for assessment for each of the years 2035, 2050 and 2065 are outlined in Table 5.1.

Table 5.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project.
Do Minimum Scenario	Committed transport schemes in the absence of the Project.
Do Something - Scenario A	Scenario with the Project and committed transport schemes only.
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for Opening year (2035) and planned schemes under the Transport Strategy for the GDA for the Design Year (2050) and the Forecast Year (2065).

5.1.1.1 Boarding and Alighting Volumes

Table 5.2 to Table 5.9 show boarding, alighting and interchange numbers for the Griffith Park Station at different peak periods along with the destination and origins of passengers in the AM Peak. All data has been retrieved from the ERM developed by the NTA. Data in this section was obtained for the busiest hour within each of the following peak periods:

- AM: busiest hour between 07:00 – 10:00;
- LT (lunch time): busiest hour between 10:00 – 13:00;
- SR (school run): busiest hour between 13:00 – 16:00; and,
- PM: busiest hour between 16:00 – 19:00.

Table 5.1 presents the volume of passengers boarding and alighting at Griffith Park Station over the 12hr peak period (07:00-19:00) in both Scenario A and Scenario B. Scenario A has approximately 3,000 boarding passengers and 3,300 alighting passengers in 2065; and Scenario B has approximately 2,100 boarding passengers and 2,500 alighting passengers in 2065.

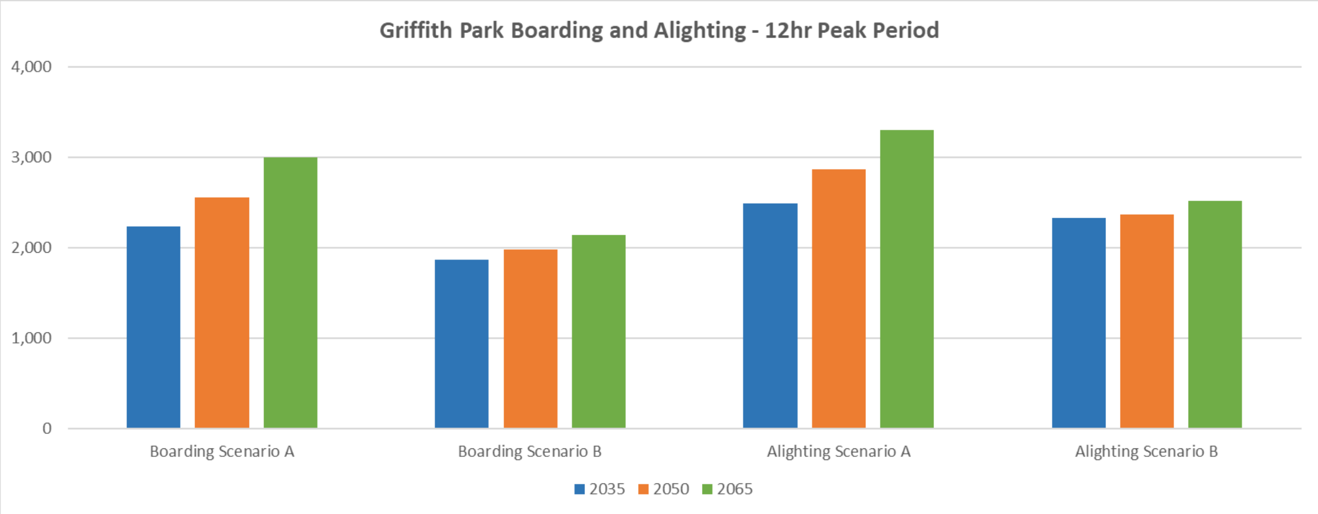


Figure 5.1: Griffith Park Station 12hr Boarding and Alighting in Scenario A and Scenario B

5.1.1.2 Boarding and Alighting Volumes: Scenario A

Table 5.2 to Table 5.4 below highlight the boarding and alighting passenger numbers for Griffith Park Station in Scenario A.

Table 5.2 below highlights the boarding and alighting passenger numbers for Griffith Park Station during the Opening Year, 2035. During the AM peak hour 292 passengers are expected to board MetroLink vehicles at Griffith Park Station and head south, with 62 heading north. Furthermore, 260 northbound passengers are expected to alight at Griffith Park, with 235 southbound passengers alighting. In the PM peak hour, 149 passengers are estimated to board and head south, with 145 heading north. In contrast, 236 northbound passengers are predicted to alight at Griffith Park, along with 67 southbound passengers.

Table 5.2: Boarding and Alighting Numbers at Griffith Park Station in 2035, Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	62	260	5,129	36	60	3,235	88	68	3,954	145	236	7,691
Southbound	292	235	10,013	61	60	3,773	79	46	3,847	149	67	4,312

Source: East Regional Model (ERM)

For the year 2050, during the AM peak hour, 317 passengers are expected to board MetroLink vehicles and head south while 79 passengers are expected to head north. It is expected 278 northbound passengers and 273 southbound passengers will be alighting. In the PM peak hour, it is estimated that 167 northbound passengers and 158 southbound passengers will board, while 257 northbound passengers and 84 southbound passengers are expected to alight.

Table 5.3: Boarding and Alighting Numbers at Griffith Park Station in 2050, Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	79	278	6,469	50	73	4,591	111	77	4,991	167	257	9,523
Southbound	317	273	11,889	71	84	5,574	88	60	5,042	158	84	5,475

Source: East Regional Model (ERM)

During the AM peak hour for the year 2065, 358 passengers are expected to board MetroLink vehicles at Griffith Park Station and head south while 100 passengers are expected to head north. It is predicted 308 northbound passengers and 314 southbound passengers will alight. In the PM peak hour, it is estimated that 192 northbound passengers and 173 southbound passengers will board, while 291 northbound passengers and 101 southbound passengers are expected to alight.

Table 5.4: Boarding and Alighting Numbers at Griffith Park Station in 2065, Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	100	308	7,910	65	85	5,579	148	92	6,728	192	291	11,738
Southbound	358	314	14,147	84	98	6,404	100	74	6,304	173	101	6,965

Source: East Regional Model (ERM)

5.1.1.3 Boarding and Alighting Volumes: Scenario B

Table 5.5 to Table 5.7 below highlight the boarding and alighting passenger numbers for Griffith Park Station in Scenario B.

For the year 2035, during the AM peak hour, 229 passengers are expected to board MetroLink vehicles at Griffith Park Station and head south while 56 are expected to head north. It is estimated 228 northbound passengers and 213 southbound passengers will alight. During the PM peak hour, 129 northbound passengers and 116 southbound passengers are expected to board at Griffith Park Station, while 216 northbound passengers and 60 southbound passengers are expected to alight.

Table 5.5: Boarding and Alighting Numbers at Griffith Park Station in 2035, Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	56	228	5,193	35	60	3,325	82	70	4,146	129	216	7,066
Southbound	229	213	9,784	47	65	4,087	65	49	4,057	116	60	4,341

Source: East Regional Model (ERM)

Table 5.6 shows the boarding and alighting passenger numbers for the 2050 year. During the AM peak hour, it is expected 214 passengers will board MetroLink vehicles and head south while 64 passengers will board and head north. It is expected 231 northbound passengers and 265 southbound passengers will alight. During the PM peak hour, 122 southbound passengers and 144 northbound passengers are expected to board at Griffith Park Station, while 68 southbound passengers and 195 northbound passengers are expected to alight.

Table 5.6: Boarding and Alighting Numbers at Griffith Park Station in 2050, Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	64	231	6,625	45	59	4,953	94	63	5,079	144	195	8,674
Southbound	214	265	11,200	48	59	5,604	72	47	5,297	122	68	5,967

Source: East Regional Model (ERM)

For the year 2065, during the AM peak hour, 218 passengers are expected to board MetroLink vehicles at Griffith Park Station and head south, while 75 are estimated to travel north. 235 northbound passengers and 289 southbound passengers are expected to alight. During the PM peak hour, 163 northbound passengers and 123 southbound passengers are expected to board, while 202 northbound passengers and 72 southbound passengers are expected to alight at Griffith Park Station.

Table 5.7: Boarding and Alighting Numbers at Griffith Park Station in 2065, Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	75	235	7,600	50	65	5,791	109	66	6,593	163	202	9,576
Southbound	218	289	13,951	52	66	6,649	75	52	6,366	123	72	6,415

Source: East Regional Model (ERM)

5.1.1.4 Public Transport Interchange Volumes

As part of the Bus Network Redesign proposals, Griffith Park Station will be served by E Spine routes, with Other City Bound route 19 serving Home Farm Road. Other City Bound routes 23 and 24 will also serve Botanic Road to the south of the proposed station. Orbital route N2 along the R102 Griffith Avenue will be in close proximity of the proposed station. More information on the future public transport network around the station can be found in Section 3.2 of this document.

Table 5.8 and Table 5.9 present the volumes of passengers interchanging to and from MetroLink vehicles with other public transport modes for the AM and PM peak hours in 2035, 2050 and 2065, for Scenario A and Scenario B respectively. Most passengers will originate from, or have final destinations in, the surrounding zones. Minimal number of passengers are expected to be transferring to or from the bus network.

Table 5.8: Transfers To/From Other Public Transport Modes in Scenario A

Scenario A									
Year	Peak	Boarding				Alighting			
		First Boarding	From Bus	From Rail/DART	From Luas	Final Stop	To Bus	To Rail/DART	To Luas
2035	AM	354	1	-	-	485	10	-	-
	PM	292	1	-	-	300	3	-	-
2050	AM	395	1	-	-	540	11	-	-
	PM	324	1	-	-	337	4	-	-
2065	AM	458	0	-	-	610	12	-	-
	PM	364	0	-	-	388	5	-	-

Source: East Regional Model (ERM)

Table 5.9: Transfers To/From Other Public Transport Modes in Scenario B

Scenario A									
Year	Peak	Boarding				Alighting			
		First Boarding	From Bus	From Rail/DART	From Luas	Final Stop	To Bus	To Rail/DART	To Luas
2035	AM	284	1	-	-	435	6	-	-
	PM	244	1	-	-	273	2	-	-
2050	AM	278	1	-	-	493	3	-	-
	PM	265	1	-	-	261	2	-	-
2065	AM	293	0	-	-	519	5	-	-
	PM	285	1	-	-	273	2	-	-

Source: East Regional Model (ERM)

5.1.1.5 Distribution of Boarding and Alighting Passengers

Figure 5.2 below shows the origins of passengers arriving to board at the station and Figure 5.3 shows the destination of passengers alighting at Griffith Park Station during the Scenario A 2050 AM peak hour. The width of the lines is proportional to the number of commuters leaving/arriving at the station.

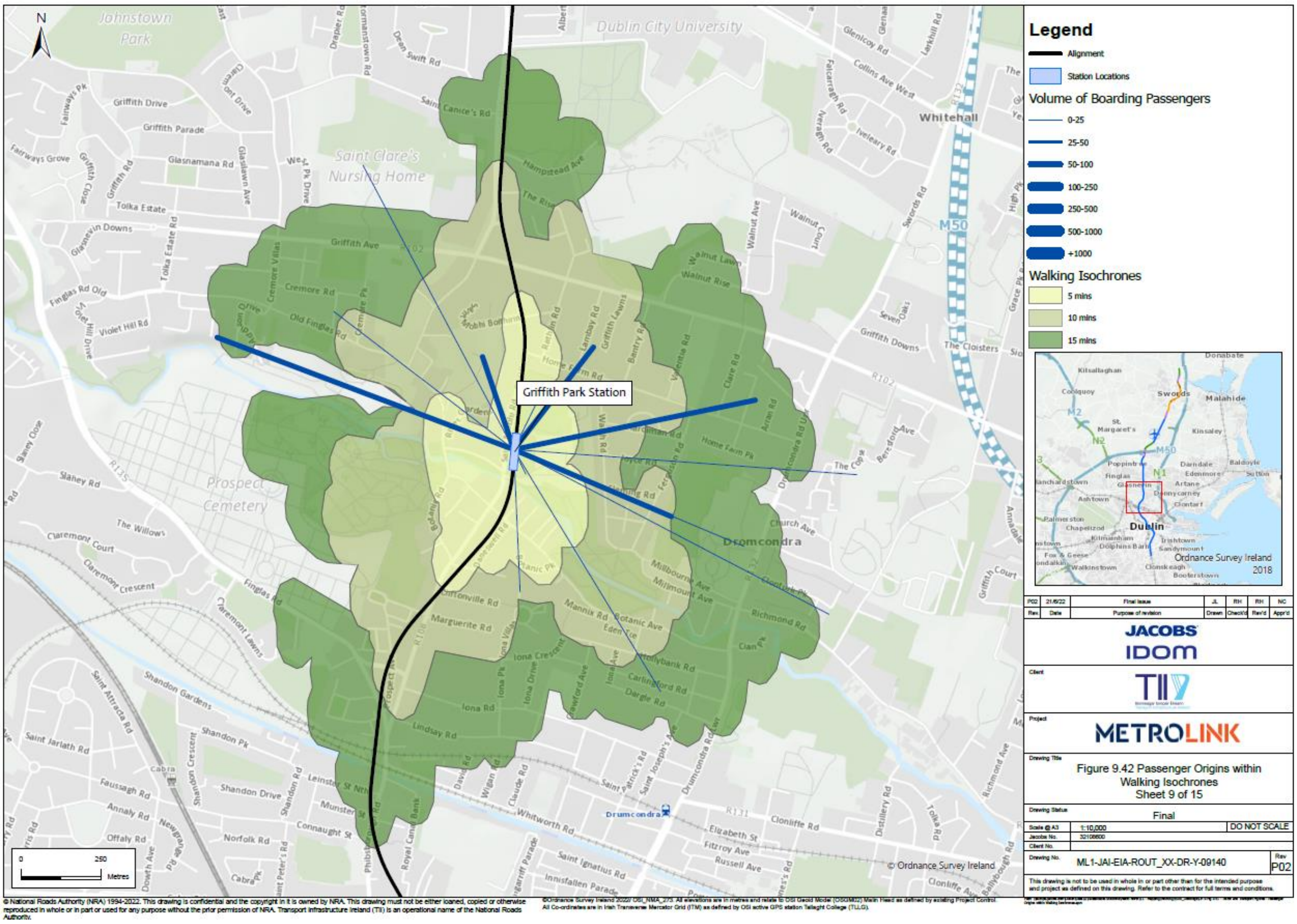


Figure 5.2: Origin of Boarding Passengers During AM peak hour and Walking Catchment Areas

The main origins of passengers in the AM peak include the large residential area around Old Finglas Road and Addison Hall Apartments to the west of the station, and to the north of the station, the Bon Secours Hospital and The Haven residential area. The modelling indicates that passengers will come from walking distances of 10-20 minutes to the east of the station and span as far as Courtlands residential area.

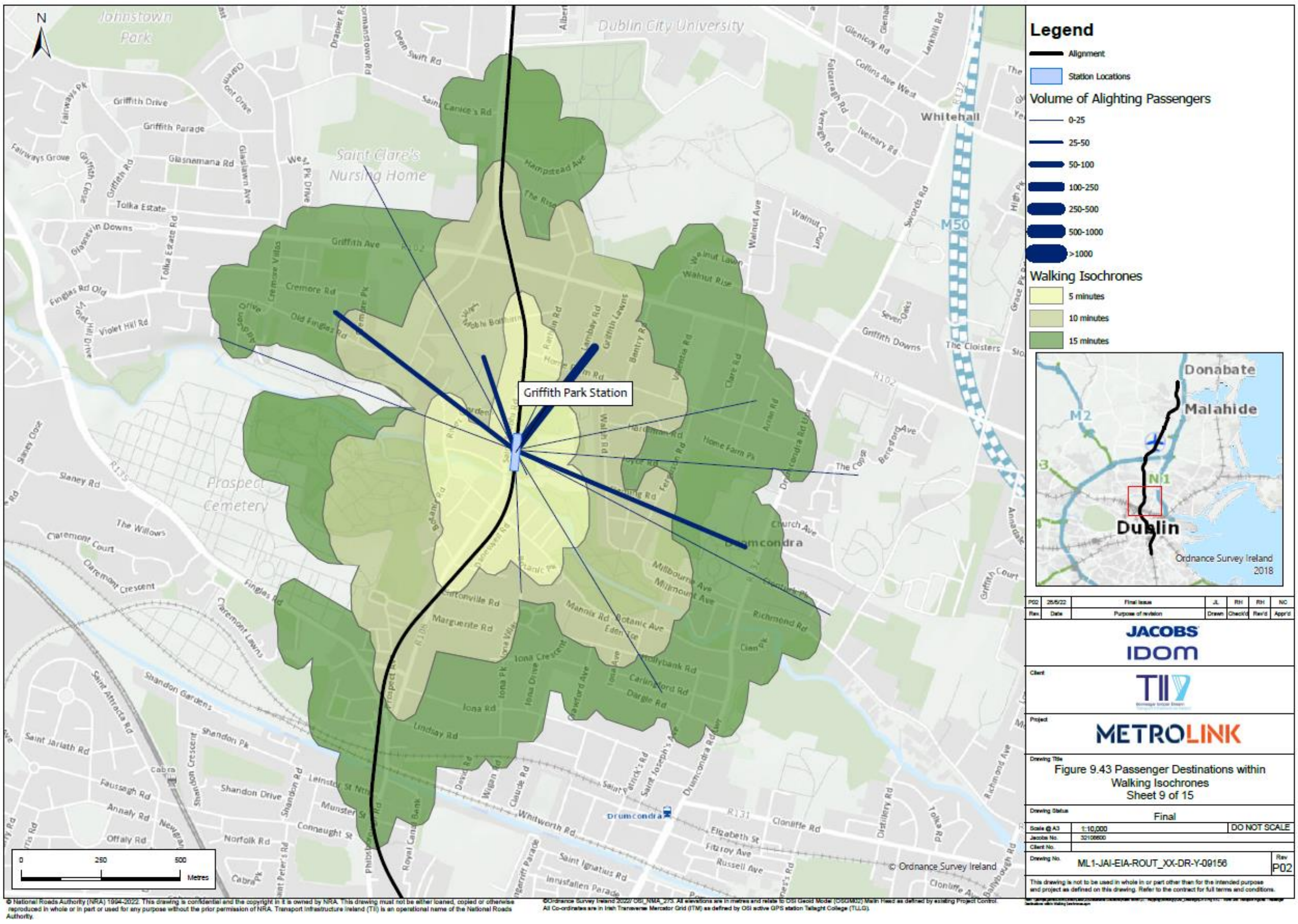


Figure 5.3: Destination for Alighting Passengers During AM peak hour and Walking Catchment Areas

The destinations for disembarking passengers in the AM peak are predominately to the northeast of the station where large residential areas exist around Home Farm Road, Walsh Road and Ferguson Road. To the northwest of the station, passengers continue their journey towards residential areas of Cremore and towards NSAI National Metrology Laboratory, Bon Secours and surrounding businesses in the Claremont Avenue area.

6. Assessment of Impacts

6.1 Operational Phase

As part of the assessment of impacts associated with the Operational Phase of the proposed Project, the impact of the proposed Griffith Park Station on all modes of transport has been examined – public transport (PT), general traffic, walking and cycling.

6.1.1 Public Transport Impact Assessment

The future street level layout at Griffith Park Station will maintain the current bus lane and bus stop southbound on St Mobhi Road. There is a bus stop on the northbound side of St Mobhi Road, which can be accessed by the pedestrian crossing to the west of the station entrance to facilitate interchange between the bus network and the Project. As part of the Bus Network Redesign proposals, Griffith Park Station will be served by E Spine routes, with Other City Bound route 19 serving Home Farm Road. Other City Bound routes 23 and 24 will also serve Botanic Road to the south of the proposed station.

The National Transport Authority's (NTA) East Regional Model (ERM) has been interrogated to estimate the reduction in private car trips associated with the origin and destination trips in the zones around Griffith Park Station. The modal split between public transport, active travel, and car users in Scenario A and Scenario B are shown in Figure 6.1 and Figure 6.2 respectively. These are based on trips made from zones within a 2km catchment of the station over a 12-hour period.

In Scenario A, PT mode share is estimated to increase by up to 3 percentage points (including the Project) compared to the Do Minimum, bringing potential PT mode share up to 30% in 2065. Car mode share is estimated to decrease by up to 1 percentage point compared to the Do Minimum, bringing it down to 31% by 2065. Active modes mode share, which includes walking and cycling, is estimated to decrease by up to 2 percentage points compared to the Do Minimum, to 39% by 2065. Overall, there will be an expected shift towards sustainable modes (PT and active modes), and a reduction in car mode share for trips made from zones around Griffith Park Station.

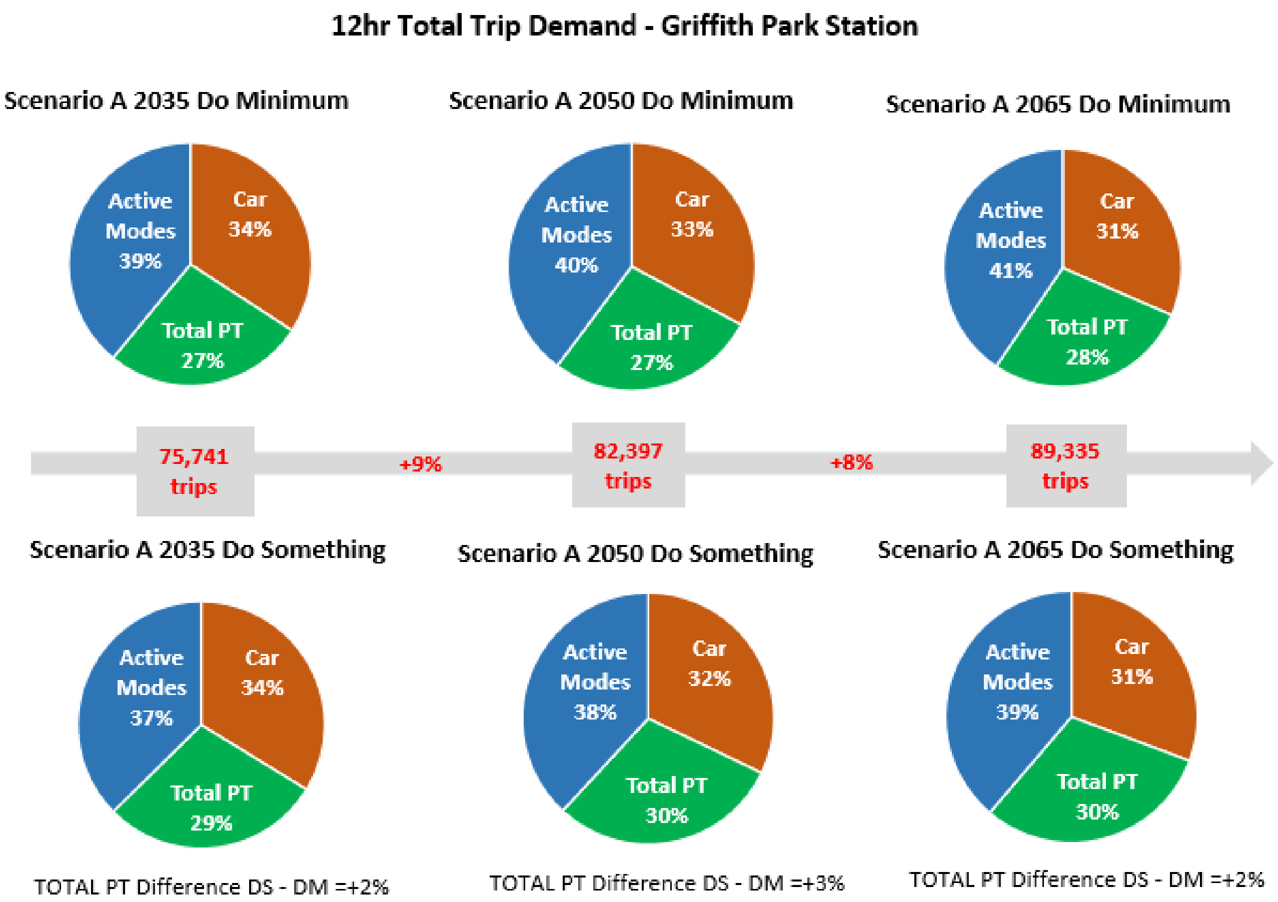


Figure 6.1: Mode Share of Trips from Zones around Griffith Park Station - Scenario A

In Scenario B, PT mode share is estimated to increase by up to 2 percentage points (including the Project) compared to the Do Minimum, bringing potential PT mode share up to 32% in 2065. Car mode share is estimated to decrease by up to 1 percentage point compared to the Do Minimum in 2035, and 0 percentage point in 2050 and 2065, bringing it down to 33% in 2035, 32% in 2050, and 31% in 2065. Active modes mode share, which includes walking and cycling, is estimated to decrease by up to 2 percentage points compared to the Do Minimum, to 37% by 2065. Overall, there will be an expected shift from active modes to public transport (including the Project) by 2065, with car mode share remaining unchanged for trips made from zones around Griffith Park Station.

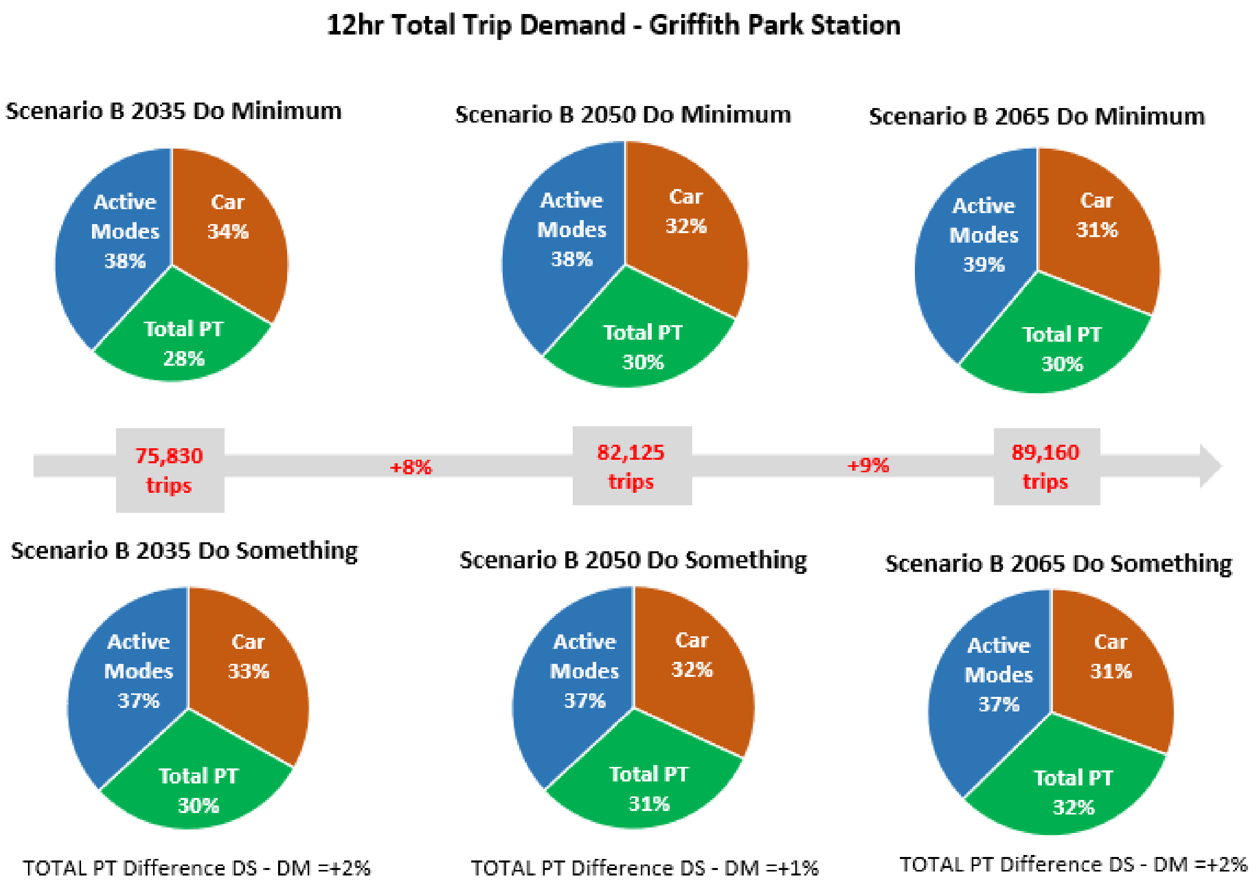


Figure 6.2: Mode Share of Trips from Zones around Griffith Park Station - Scenario B

Figure 6.3 presents the changes in public transport mode share between the Do Minimum and Do Something scenarios in Scenario A 2065 AM Peak Hour, while Figure 6.4 presents the same for Scenario B 2065 AM Peak Hour.

In the AM peak hour of 2035, 2050, and 2065, for both Scenario A and Scenario B, most zones around Griffith Park Station see estimated increase in PT mode share (including the Project) of 1-5 percentage points. In Scenario A, the zone immediately east of the station will see an estimated increase in PT mode share (including the Project) of 5-10 percentage points; and by 2065, this increase will also be expected in the zone immediately west of the station. In Scenario B, the zone immediately east of the station will see an estimated increase in PT mode share (including the Project) of 5-10 percentage points in 2050 and in 2065.

In the PM peak hour of 2035 and 2050, and 2065, for both Scenario A and Scenario B, most zones around Griffith Park Station see estimated increase in PT mode share (including the Project) of 1-5 percentage points. In both scenarios, the zone immediately east of the station will see estimated increase in PT mode share (including the Project) of 5-10 percentage points. In Scenario A, the zone immediately west of the station will also see similar increase of 5-10 percentage points by 2065.

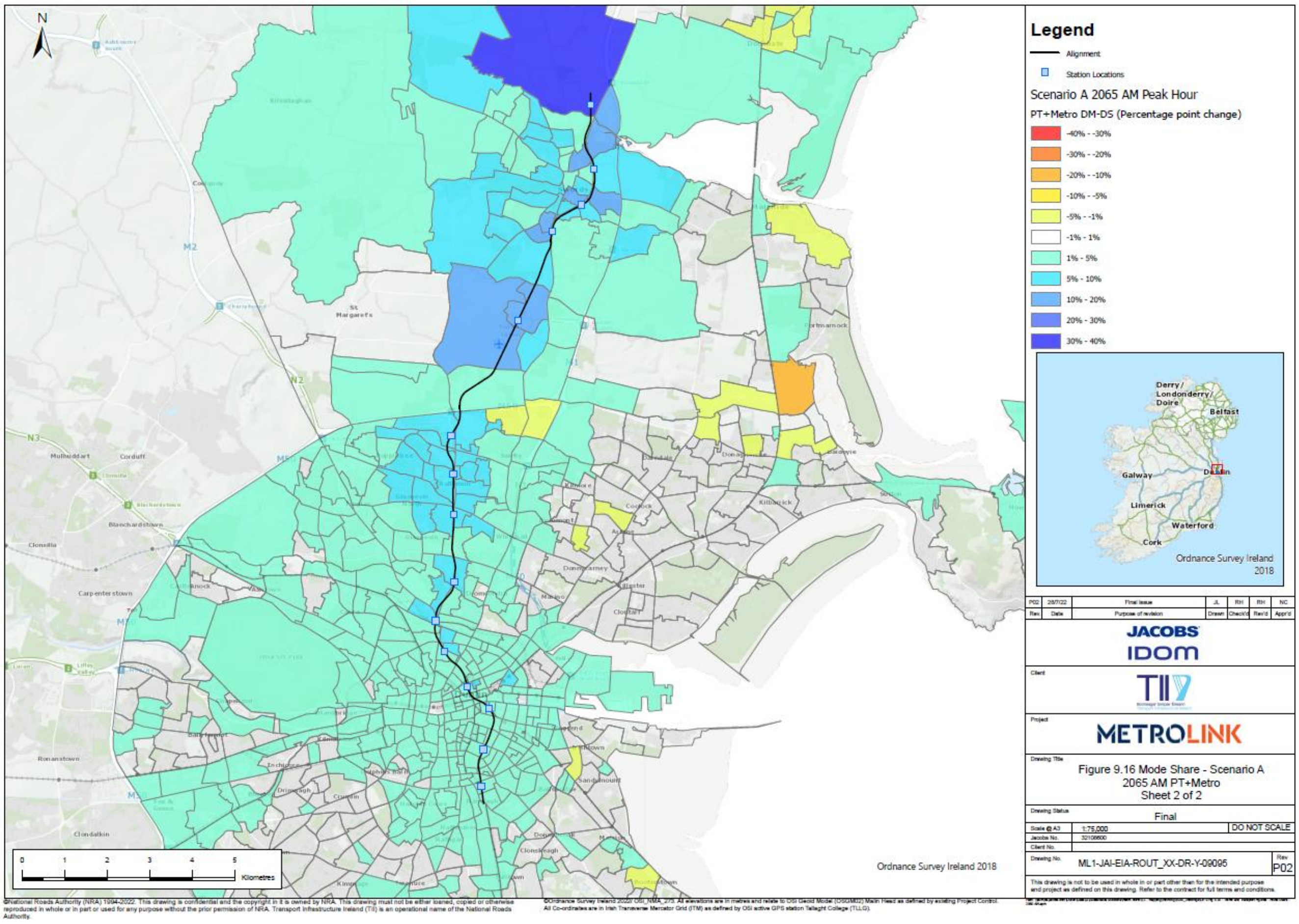


Figure 6.3: Changes in Public Transport Mode Share (including the Project) in Scenario A 2065 AM Peak Hour

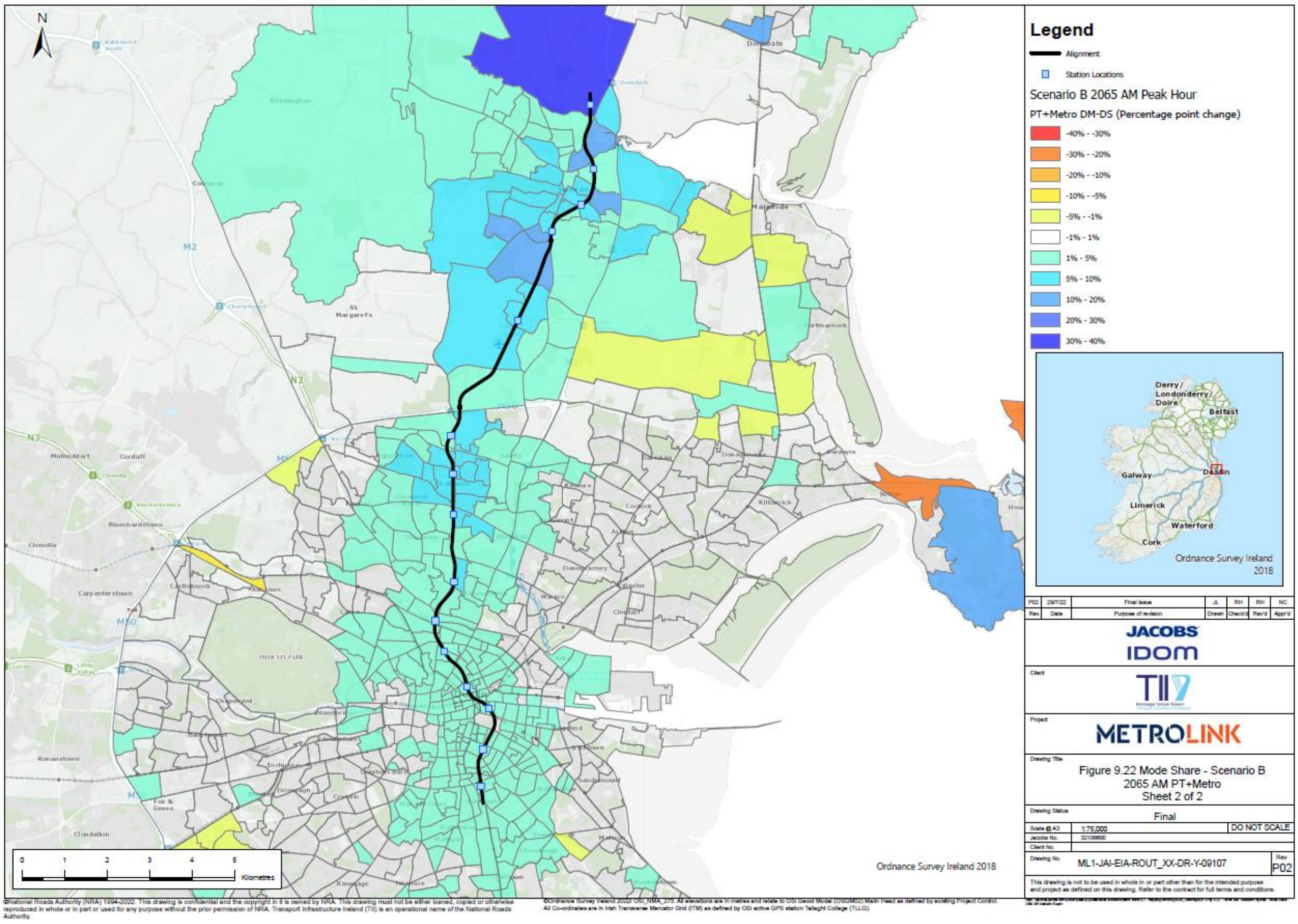


Figure 6.4: Changes in Public Transport Mode Share (including the Project) in Scenario B 2065 AM Peak Hour

End-to-end public-transport-only journey time comparisons between Do Minimum and Do Something scenarios, including interchange between the Project vehicles and other public transport modes, have been undertaken to investigate benefits to journey time with the proposed Project in place in both Scenario A and Scenario B. The assessments were carried out for zones located across the city as illustrated in Figure 6.5 and Table 6.1. These zones have been identified using local knowledge of population settlements and trip attractors.

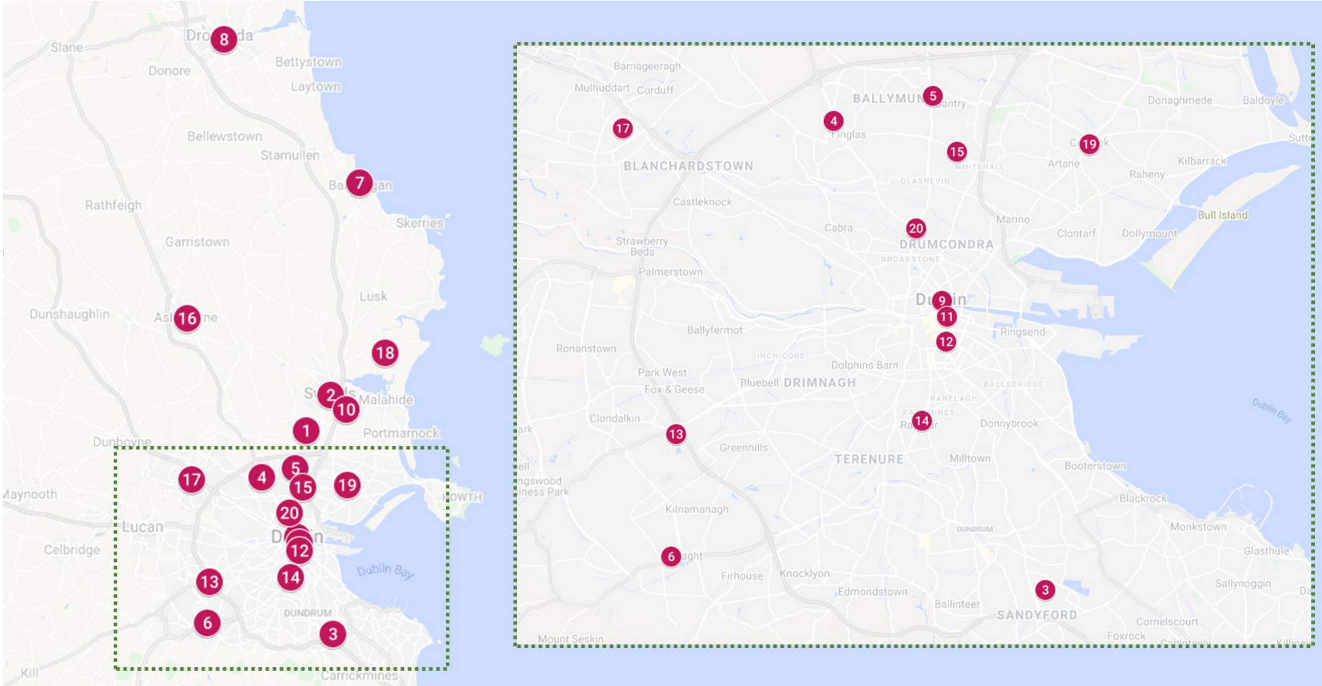


Figure 6.5: Zones assessed for public transport journey time

Table 6.1: Zones assessed for public transport journey time

Nb	Location	Nb	Location	Nb	Location	Nb	Location
1	Dublin Airport	**6**	Tallaght	**11**	College Street	**16**	Ashbourne
2	Swords Pavilion	**7**	Balbriggan	**12**	St. Stephen’s Green	**17**	Blanchardstown
3	Sandyford	**8**	Drogheda	**13**	Red Cow	**18**	Donabate
4	Finglas	**9**	O’Connell Street	**14**	Rathgar	**19**	Coolock
5	Ballymun	**10**	Sword East	**15**	DCU	**20**	Glasnevin

Griffith Park Station is located within the Glasnevin zone/ area.

In Scenario A the following changes to journey times are observed:

- The most significant journey time savings from the Glasnevin area would be to the Swords Pavilion area, of approximately 40 minutes in the 2035, 2050, and 2065 AM period. This is a reduction of over 50% compared to the Do Minimum scenario.
- Public transport journeys from the Glasnevin area to other areas in north Dublin, such as Swords East, will see savings of approximately 23 minutes in the 2035 AM period and rising to 27 minutes in the 2065 AM period; and to Dublin Airport, savings of approximately 24 minutes in the 2035, 2050, and 2065 AM period, which is a reduction of approximately 50% compared to the Do Minimum scenario.
- Public transport journeys from the Glasnevin area to key Dublin City Centre locations such as O’Connell Street area and St. Stephen’s Green area will see savings of between 4 and 10 minutes in the 2035, 2050, and 2065 AM period when the proposed Project is in place.
- Public transport journeys from the Glasnevin area to areas in south Dublin, such as Sandyford, will see savings of approximately 18 minutes in the 2035, 2050, and 2065 AM period.

In Scenario B the following changes to journey times are observed:

- The most significant journey time savings from the Glasnevin area would be to the Swords Pavilion area, of approximately 26 minutes in the 2035 AM period, and rising to 31 minutes in the 2065 AM period. This is a reduction of approximately 50% compared to the Do Minimum scenario.
- Public transport journeys from the Glasnevin area to Dublin Airport will see savings of approximately 27 minutes in the 2035 AM period, and approximately 23 minutes in the 2050 and 2065 AM period. This is a reduction of approximately 50% compared to the Do Minimum scenario.
- Public transport journeys from the Glasnevin area to key Dublin City Centre locations such as O'Connell Street area and St. Stephen's Green area will see savings of between 1 and 6 minutes in the 2035, 2050, and 2065 AM period when the proposed Project is in place.
- Public transport journeys from the Glasnevin area to areas in south Dublin, such as Sandyford and Rathgar Road area, will see savings of between 11 and 16 minutes in the 2035, 2050, and 2065 AM period.

6.1.2 Traffic Impact Assessment

The existing road network layout at Griffith Park Station will be maintained in the Operational Phase, with one lane of vehicular traffic in each direction on St Mobhi Road.

Figure 6.6 presents the changes in road mode share per zone along the alignment in Scenario A 2065, with Figure 6.7 presenting the same for Scenario B 2065. In the 2035 AM period, the zones immediately surrounding Griffith Park Station see a reduction in private car mode share of 1-5 percentage points. In the 2050 and 2065 AM periods, the zones that also see these reductions in private car mode share of 1-5 percentage points extend further beyond the alignment, such as to the east of the station along the M50 Port Tunnel.

Over the 12hr period, the zones within a 2km radius of Griffith Park Station see a reduction of over 170 car trips between the Scenario A 2035 Do Minimum and Do Something scenarios, reaching a reduction of over 390 trips in Scenario A 2050. In 2065, there is a reduction of 560 car trips between the Do Minimum and Do Something scenarios. In Scenario B, these zones see a reduction of over 106 car trips between the 2035 Do Minimum and Do Something scenarios, increasing to a reduction of 188 car trips in 2050. 2065 sees a reduction of more than 160 car trips between the Do Minimum and Do Something scenarios.

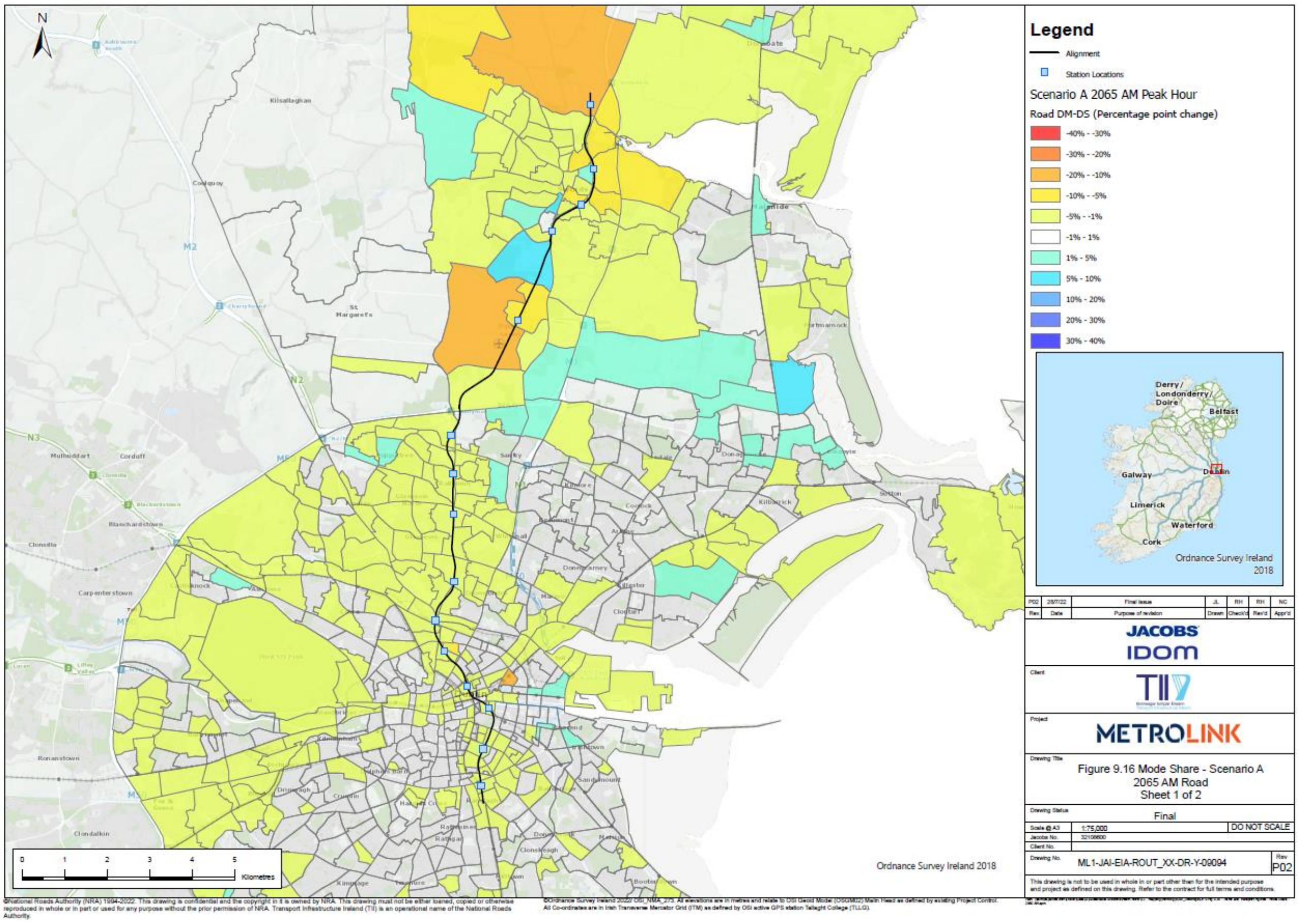


Figure 6.6: Changes in Car Mode Share per Zone in Scenario A 2065 AM Peak Hour

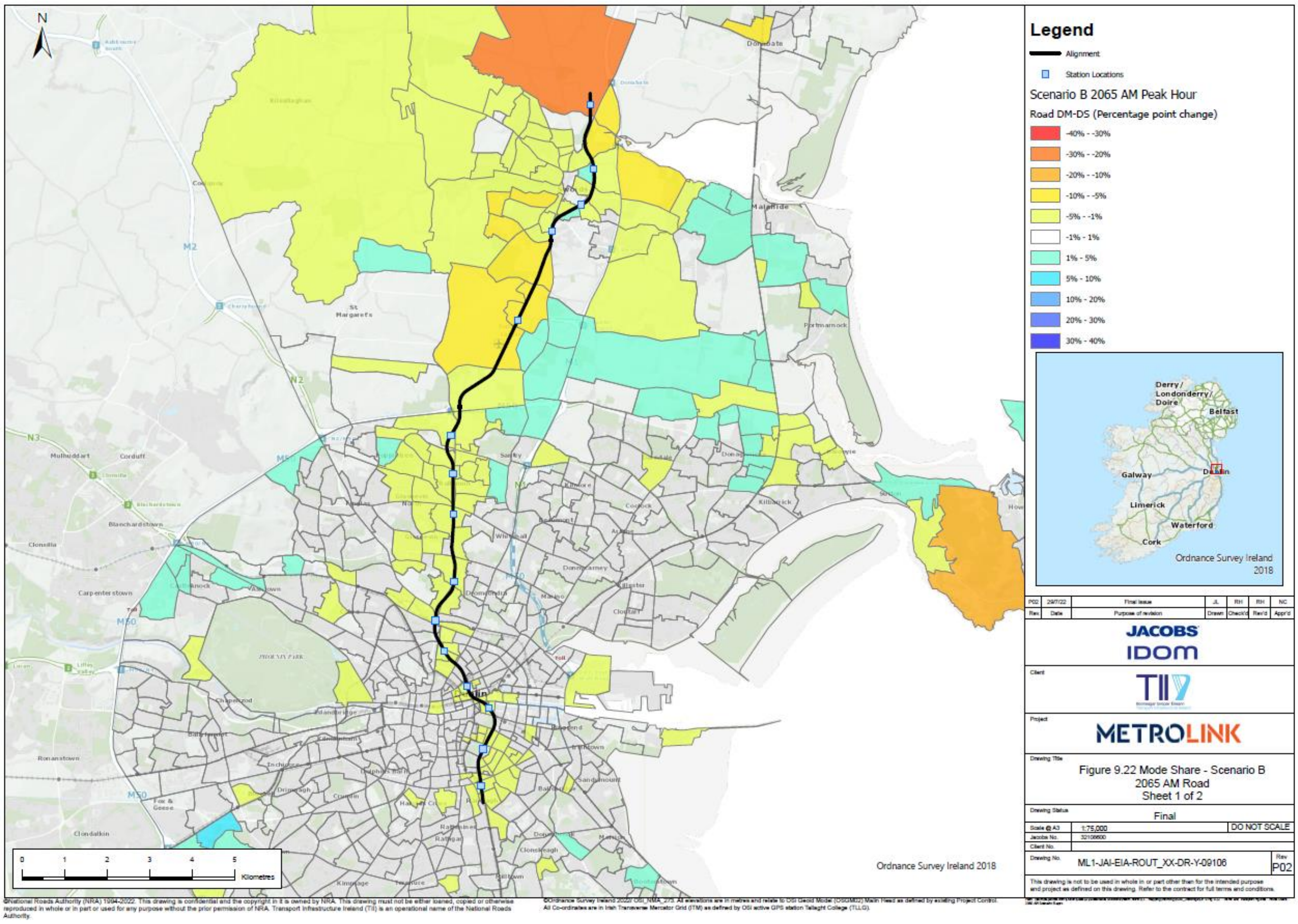


Figure 6.7: Changes in Car Mode Share in Scenario B 2065 AM Peak Hour

6.1.3 Pedestrian Impact Assessment

An assessment of the pedestrian provision around the station has been undertaken, in order to confirm its robustness in catering for the additional demand associated with the proposed project. The assessment comprises of a 'Footway Comfort Assessment', which predicts the pedestrian comfort levels based on industry guidance, taking cognisance of factors including pedestrian demand and footway width. Furthermore, an additional assessment has been undertaken in order to determine the adequacy of pedestrian crossing provisions in catering for predicted station demand.

The Scenario A 2050 design year was assessed, with Scenario A 2065 also assessed as the 'worst-case scenario' for passenger numbers, as this scenario has the highest volume of total AM passenger demand in the future year between both Scenario A and Scenario B (almost 61,000 AM boarding passengers across the alignment in Scenario A, compared to almost 55,000 AM boarding passengers in Scenario B). At all stations, the passenger demand in the AM peak hour is lower in Scenario B than in Scenario A, with the exception of Fosterstown Station where there is a 12% increase in Scenario B. As such, Scenario B has not been assessed, with the exception of Fosterstown Station to ensure that all possible significant impacts are accounted for.

It has been assumed that all the proposed Project's associated pedestrian movements are 'new' onto the network, i.e., they are not currently occurring along the section of the footway network under review.

Figure 6.8 illustrates the assessment of pedestrians using the station during the AM peak for Scenario A in 2050. The assessment shows that all links around Griffith Park Station comply with DCC guidance and therefore no further assessment was carried out. As a result, the operational stage of the proposed Project has an imperceptible impact on pedestrians in this area as there is a negligible change from the baseline scenario.

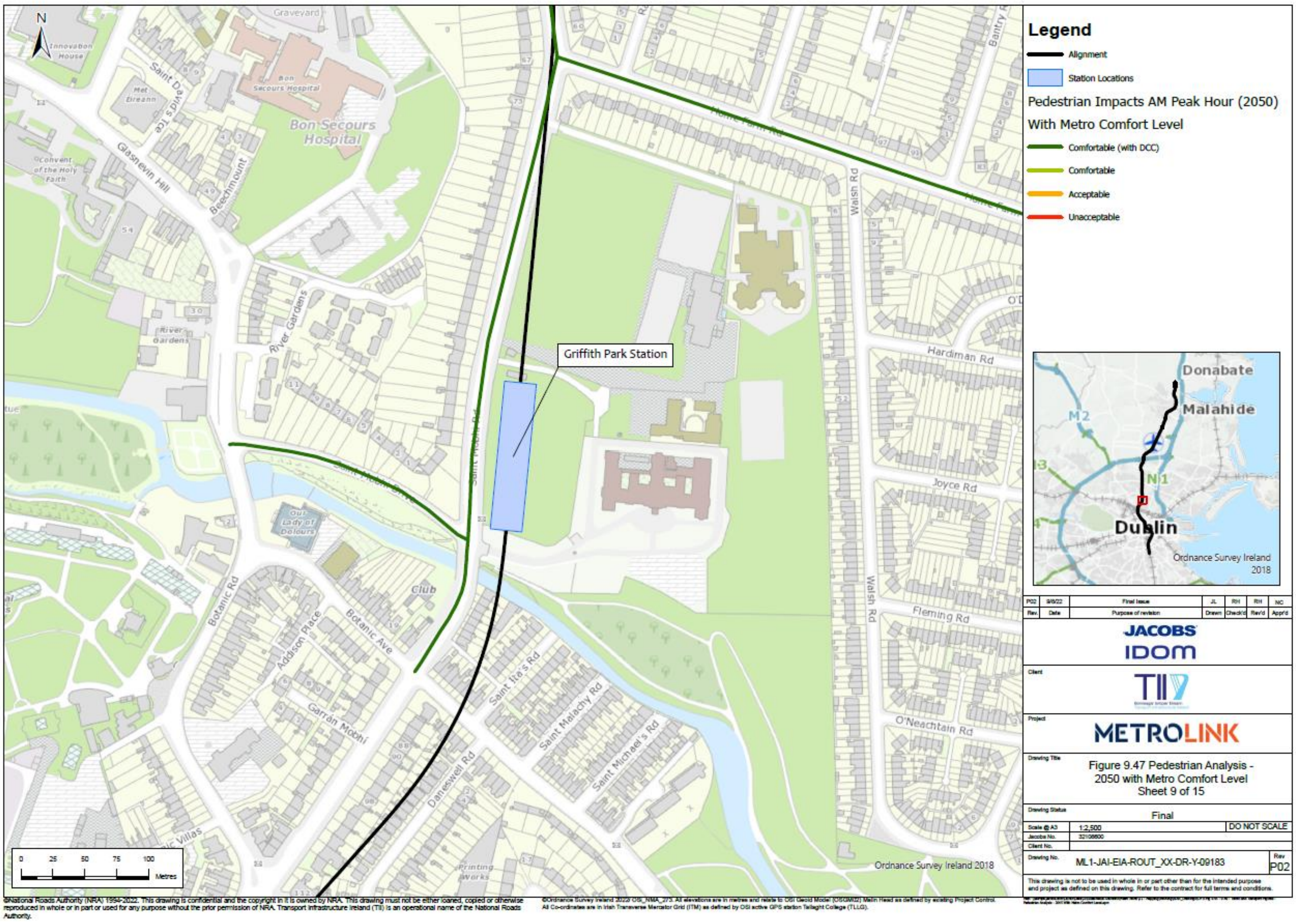


Figure 6.8: Pedestrian Comfort Assessment in Scenario A 2050 AM Peak Hour

In the 2065 AM peak hour, the assessment indicates the same results, demonstrating that the footway provisions are sufficient to accommodate future passenger volumes without increasing impact.

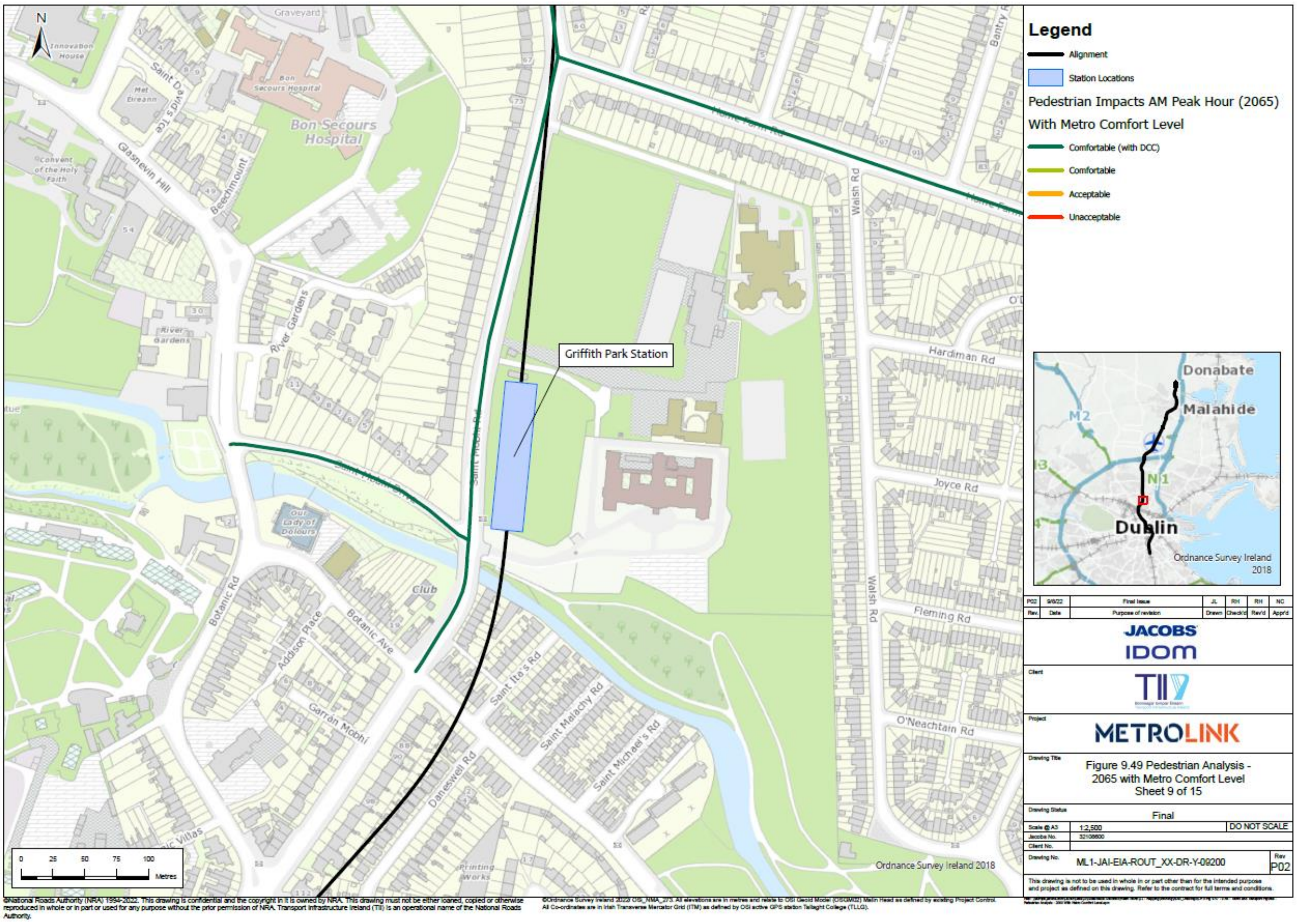


Figure 6.9: Pedestrian Comfort Assessment in Scenario A 2065 AM Peak Hour

6.1.4 Cyclist Impact Assessment

Improvements will be made to the current cycling infrastructure around the future Griffith Park Station, within the Red Line Boundary, when the proposed Project is in place. The current cycle infrastructure will be upgraded to a two-way cycle lane on the southbound side of St Mobhi Road, resulting in the Quality of Service improving from Level C in the Baseline scenario to Level A in the Operational Phase.

A methodology has been applied to determine the potential demand for cycle parking at each of the stations. This methodology utilises the number of boarding and alighting passengers, the distance of origin/destinations from the station, and the location of the station. The passenger demand from an earlier Opening Year has been utilised to determine the potential cycle demand in the Opening Year, and in the Opening Year +5 Years.

This approach has informed the design and the number of cycle parking spaces provided at each station. Other factors such as the availability of land, potential future land uses, and parking supply and the location of the station have also been taken into consideration by the design team in determining the quantum of cycle parking spaces provided.

For the Griffith Park Station, a total of 176 cycle spaces are proposed.

6.1.5 Road Safety

A Stage 1 Road Safety Audit has been undertaken for all of the proposed highway works for the Project. This is under a separate cover.

7. Summary

In Scenario A, Griffith Park Station will facilitate approximately 4,700 passenger movements over the 12hr peak period (07:00-19:00) in 2035, rising to over 5,400 in 2050 and 6,300 in 2065. In Scenario B, Griffith Park Station will facilitate approximately 4,100 passenger movements over the 12hr peak period (07:00-19:00) in 2035, rising to over 4,300 in 2050 and 4,600 in 2065.

The main catchment origins and destinations of the people boarding and alighting at the Griffith Park Station will be:

- Origins from residential areas around The Haven and the Old Finglas Road
- Origins from Bon Secours Hospital
- Destinations to residential areas around Home Farm Road, Walsh Road and Ferguson Road.
- Destinations to Bon Secours Hospital and surrounding businesses in the Claremont Avenue area.

The proposed Project will result in increases in public transport mode share of 1-5 percentage points for most zones around Griffith Park Station, and 5-10 percentage points for the zone immediately east of the station, in both Scenario A and Scenario B. Conversely, there will be a reduction in road mode share of 1-5 percentage points for most zones surrounding Griffith Park Station, in both scenarios.

The proposed Project will result in improvements to the public transport journey times for people in the area. AM period public transport journeys from Glasnevin area to Swords Pavilion area are expected to see time savings of a maximum of 40 minutes in both Scenario A and Scenario B, by 2065. During the AM period, public transport journeys from Glasnevin area to Dublin Airport are expected to see time savings of approximately 25 minutes in Scenario A, and 23 minutes in Scenario B, by 2065. These are time savings of approximately 50% compared to the Do Minimum.

The station will provide for 176 cycle parking spaces. The pedestrian assessment indicates that the existing footway provisions at Griffith Park are sufficient to accommodate future passenger volumes without increasing impact in future years.

In overall terms, Griffith Park Station will provide for improvements to the public transport network resulting in decreased private car usage/trips and increased public transport usage, and will facilitate walking and cycling to the station, without significantly impacting on the operation of the road network in the area.

Contents

1. Introduction

1.1 Background

Jacobs/IDOM has been commissioned to undertake the Environmental Impact Assessment Report (EIAR) in support of the proposed Dublin MetroLink project (hereafter referred to as the proposed Project). The EIAR is being prepared to assess the environmental impacts of the proposed Project, including in relation to traffic and transport.

This Traffic and Transportation Assessment (TTA) assesses the operational impacts associated with the proposed Glasnevin Station on the traffic and transport network in the local area. TTA's have been prepared for each individual station as well as an overall TTA for the proposed Project.

Jacobs/IDOM has also been commissioned to undertake a scheme traffic management plan (STMP). The STMP is a standalone report within the EIAR. The STMP assesses the impact of the construction of the Project on all road users and proposes mitigation measures where appropriate.

A summary of the TTAs and STMP will be included within the Traffic and Transportation chapter of the EIAR.

This report deals with the impact of the MetroLink station at Glasnevin and not the DART station.

1.2 Assessment Scenarios

In order to provide a rounded assessment of the proposed Project, its impacts have been reviewed for a range of future years, and in the context of two alternative future scenarios. The forecast years are 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). As outlined in Table 1.1, Scenario A includes the proposed Project and committed transport schemes only, while Scenario B includes a range of further planned schemes depending on the forecast year.

Table 1.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project.
Do Minimum Scenario	Committed transport schemes in the absence of the Project.
Do Something - Scenario A	Scenario with the Project and committed transport schemes only.
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for Opening year (2035) and planned schemes under the Transport Strategy for the GDA for the Design Year (2050) and the Forecast Year (2065).

Committed transport schemes in the Do Minimum scenario and in Scenario A, that have been progressed through planning and are either under construction or are programmed into the capital expenditure budget, include, but are not limited to:

- Luas Green Line Capacity Enhancement – Phase 1;

- BusConnects Dublin Area Network Redesign; and
- BusConnects Fares and Ticketing.

Scenario B represents the likely future receiving environment and is based on the delivery of the schemes identified within the National Development Plan for 2035, and on the implementation of the NTA's Greater Dublin Area (GDA) Transport Strategy for 2050 and 2065. As such, this scenario considers the cumulative impacts of interactions between other projects that are most likely to impact on transport movements in the area. Schemes included in this scenario are, but are not limited to:

- Luas Green Line Capacity Enhancement - Phase 2;
- Luas Finglas;
- Luas Lucan;
- BusConnects Core Bus Corridors (planned 16 corridors); and
- DART+.

More information on each modelled scenario is available in the Transport Modelling Plan (Appendix A9.3).

1.3 Project Overview

The proposed Project will be a high-capacity, high frequency rail line running from Swords to Charlemont, linking Dublin Airport, Irish Rail, the Dublin Area Rapid Transit (DART), Dublin Bus and Luas services, improving integration across public transport network in the Greater Dublin Area (GDA).

As well as linking major transport hubs, the proposed Project will connect key destinations including Swords, Ballymun, the Mater Hospital, the Rotunda, Dublin City University and Trinity College with much of the 19-kilometre route running underground.

When operations commence, there will be trains every 3 minutes during peak periods. This can rise to a service every 90 seconds, with the system capable of carrying a peak line flow of 20,000 passengers per hour in each direction.

1.3.1 Glasnevin Station

Glasnevin station will be located on the R108, adjacent to the Whitworth Road junction, just north of the Royal Canal. It is set to be located near to the current Brian Boru pub, extending north with the boundary of a residential unit and to the south over the Maynooth and Kildare rail lines.

Glasnevin Station is a proposed interchange station in Phibsborough, serving the planned MetroLink system and two Iarnród Éireann / Irish Rail lines, namely the Western Commuter Line (Maynooth to Docklands) and the South Western Commuter Line (Maynooth and Phoenix Park to Connolly). The existing heavy railway lines lie on the north bank and parallel with the Royal Canal which is aligned approximately east-west in this location. The station will be located on the west side of the R108 Prospect Road and will be aligned north-south parallel to the R108. The surrounding area is largely residential, with the National Botanic Gardens located to the north and north-east.

Glasnevin Station will include enhanced pedestrian and cyclist facilities along Prospect Road. A two-way cycle lane along the east side of the road and widened footpaths on the west side will be provided as well as an additional pedestrian crossing to the north of the station. Enhanced bus stop facilities are proposed outside the station. A taxi / drop off facility has also been provided to the north of the station in lands currently occupied by the Brian Boru car park. A new access road from Prospect Road to these facilities will also provide access to the bicycle parking providing 120 spaces.

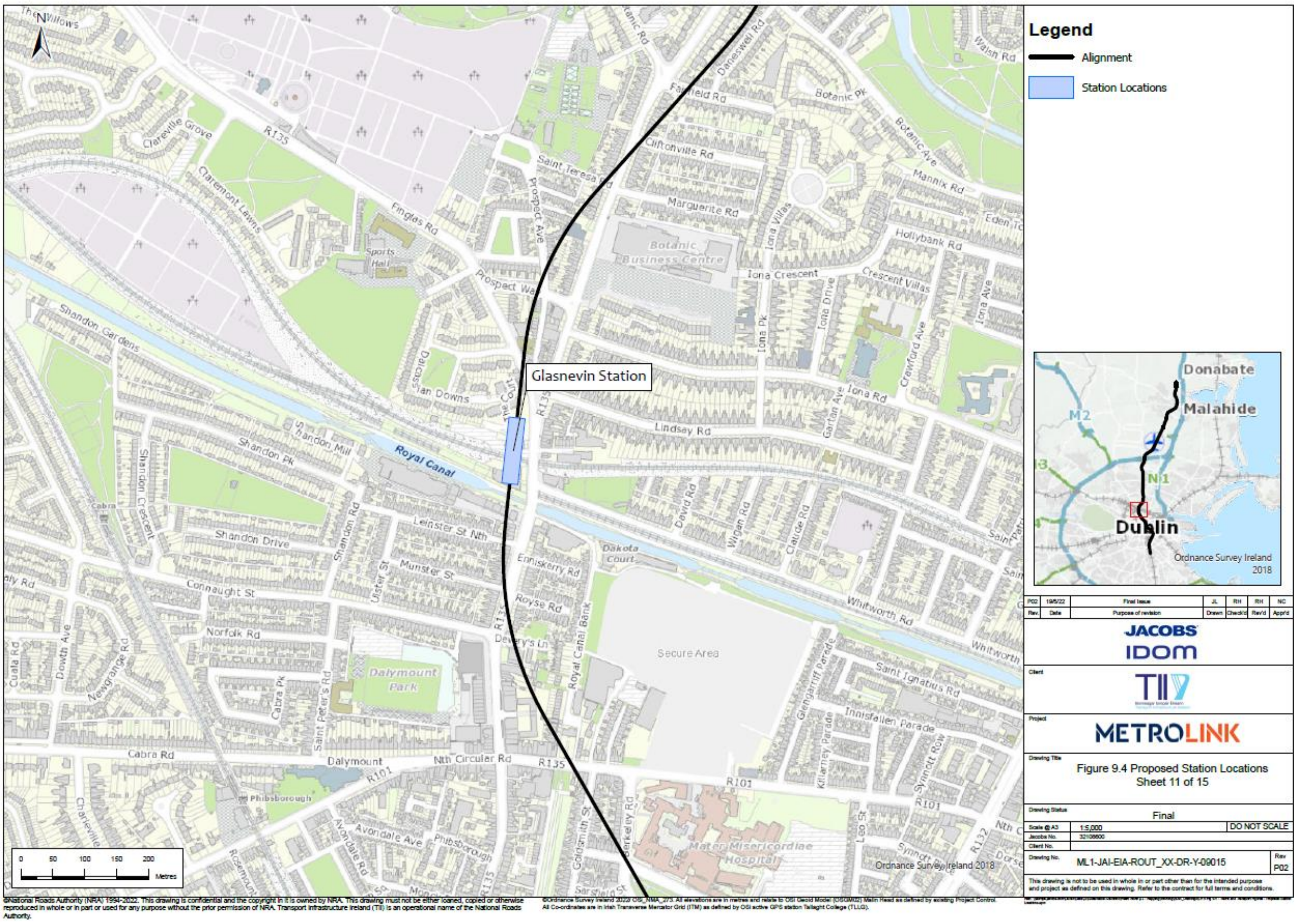


Figure 1.1: Proposed Station Location of Glasnevin Station

2. Policy Context

Reference should be made to the Chapter 3 of the Overall Project TTA and Planning Policy Report (ML1-JAI-PLD-ROUT_XX-RP-Y-00020) for further detail on the overall project in relation to key national and regional policies.

The proposed Glasnevin Station does not lie within any local area plan or masterplan lands.

The National Spatial Strategy states that in order to promote sustainable development, it is essential to consolidate the physical growth of Dublin City. This should be supported by effective land use policies for the urban area which underpin increased investment in high quality public transport infrastructure. It outlines a number of requirements that are key to creating a compact and economically vibrant city including;

- The effective integration of land use and transportation policy: and
- Facilitating the movement of people and goods through an effective public transport system.

The Regional Planning Guidelines promote the consolidation of development within the metropolitan area, and the achievement of sustainable densities in tandem with a much-enhanced multi-modal transport system.

The Transport Strategy for the Greater Dublin Area 2016-2035 and the Regional Planning Guidelines are required under legislation to be consistent with each other, and therefore the purpose of the Strategy is “to contribute to the economic, social and cultural progress of the Greater Dublin Area by providing for the efficient, effective and sustainable movement of people and goods.” The Strategy sets out the necessary transport provision for the period up to 2035, to achieve this objective for the region, including the provision of the Project.

2.1 Dublin City Council Development Plan (2016-2022)

The overarching theme of the local policy regarding movement is “helping to build an integrated transport network and encouraging the provision of greater choice of public transport and active travel.”[1]

Based on review of the Dublin City Council Development Plan (2016 – 2022) it is the Policy of Dublin City Council (DCC):

SC19: To promote the development of a network of active, attractive and safe streets and public spaces which are memorable, and include, where appropriate, seating, and which encourage walking as the preferred means of movement between buildings and activities in the city. In the case of pedestrian movement within major developments, the creation of a public street is preferable to an enclosed arcade or other passageway.

SC20: To promote the development of high-quality streets and public spaces which are accessible and inclusive, and which deliver vibrant, attractive, accessible and safe places and meet the needs of the city’s diverse communities.

MT2: Whilst having regard to the necessity for private car usage and the economic benefit to the city centre retail core as well as the city and national economy, to continue to promote modal shift from private car use towards increased use of more sustainable forms of transport such as walking, cycling and public transport, and to co-operate with the National Transport Authority (NTA), Transport Infrastructure Ireland (TII) and other transport agencies in progressing an integrated set of transport objectives. Initiatives contained in the government’s ‘Smarter Travel’ document and in the NTA’s draft transport strategy are key elements of this approach.

[1] Dublin City council - Dublin City Development Plan 2016–2022: Written Statement; Section 1.2 (e)

MT3: To support and facilitate the development of an integrated public transport network with efficient interchange between transport modes, serving the existing and future needs of the city in association with relevant transport providers, agencies and stakeholders.

MT4: To promote and facilitate the provision of Metro, all heavy elements of the DART Expansion Programme including DART Underground (rail interconnector), the electrification of existing lines, the expansion of Luas, and improvements to the bus network in order to achieve strategic transport objectives.

MT5: To work with the relevant transport providers, agencies and stakeholders to facilitate the integration of active travel (walking, cycling etc.) with public transport, thereby making it easier for people to access and use the public transport system.

MT6: (i) To work with Iarnród Eireann, the NTA, Transport Infrastructure Ireland (TII) and other operators to progress a coordinated approach to improving the rail network, integrated with other public transport modes to ensure maximum public benefit and promoting sustainable transport and improved connectivity, (ii) To facilitate the needs of freight transport in accordance with the National Transport Authority's Transport Strategy for the Greater Dublin Area 2016 – 2035.

MT7: To improve the city's environment for walking and cycling through the implementation of improvements to thoroughfares and junctions and also through the development of new and safe routes, including the provision of foot and cycle bridges. Routes within the network will be planned in conjunction with green infrastructure objectives and on foot of (inter alia) the NTA's Cycle Network Plan for the Greater Dublin Area, and the National Cycle Manual, having regard to policy GI5 and objective GIO18.

MT8: To work with, and actively promote, initiatives by relevant agencies and stakeholders such as An Taisce's 'Green Schools' initiative and the NTA's Smarter Travel Unit, to promote active travel in schools and communities, recognising the health and social benefits of walking and cycling as well as the environmental benefits.

MT9: To promote Bike and Ride at public transport hubs by providing secure, dry, bike parking facilities.

MT10: To provide 30kph speed limits and traffic calmed areas at appropriate locations throughout the city and subject to stakeholder consultation.

MT11: To continue to promote improved permeability for both cyclists and pedestrians in existing urban areas in line with the National Transport Authority's document 'Permeability – a best practice guide'. Also, to carry out a permeability and accessibility study of appropriate areas in the vicinity of all Luas, rail and BRT routes and stations, in co-operation with Transport Infrastructure Ireland and the National Transport Authority.

2.2 Draft Dublin City Council Development Plan (2022-2028)

Building on the objectives of the Dublin City Council Development Plan 2016-2022, the Draft Dublin City Council Development Plan 2022-2028 recognises the opportunities presented by MetroLink to achieve effective integration of land-use and transportation in the area.

SMT20: Key Sustainable Transport Projects:

- To support the expeditious delivery of key sustainable transport projects including MetroLink, BusConnects, DART+ and Luas Expansion Programme so as to provide an integrated public transport network with efficient interchange between transport modes, serving the existing and future needs of the city and region.

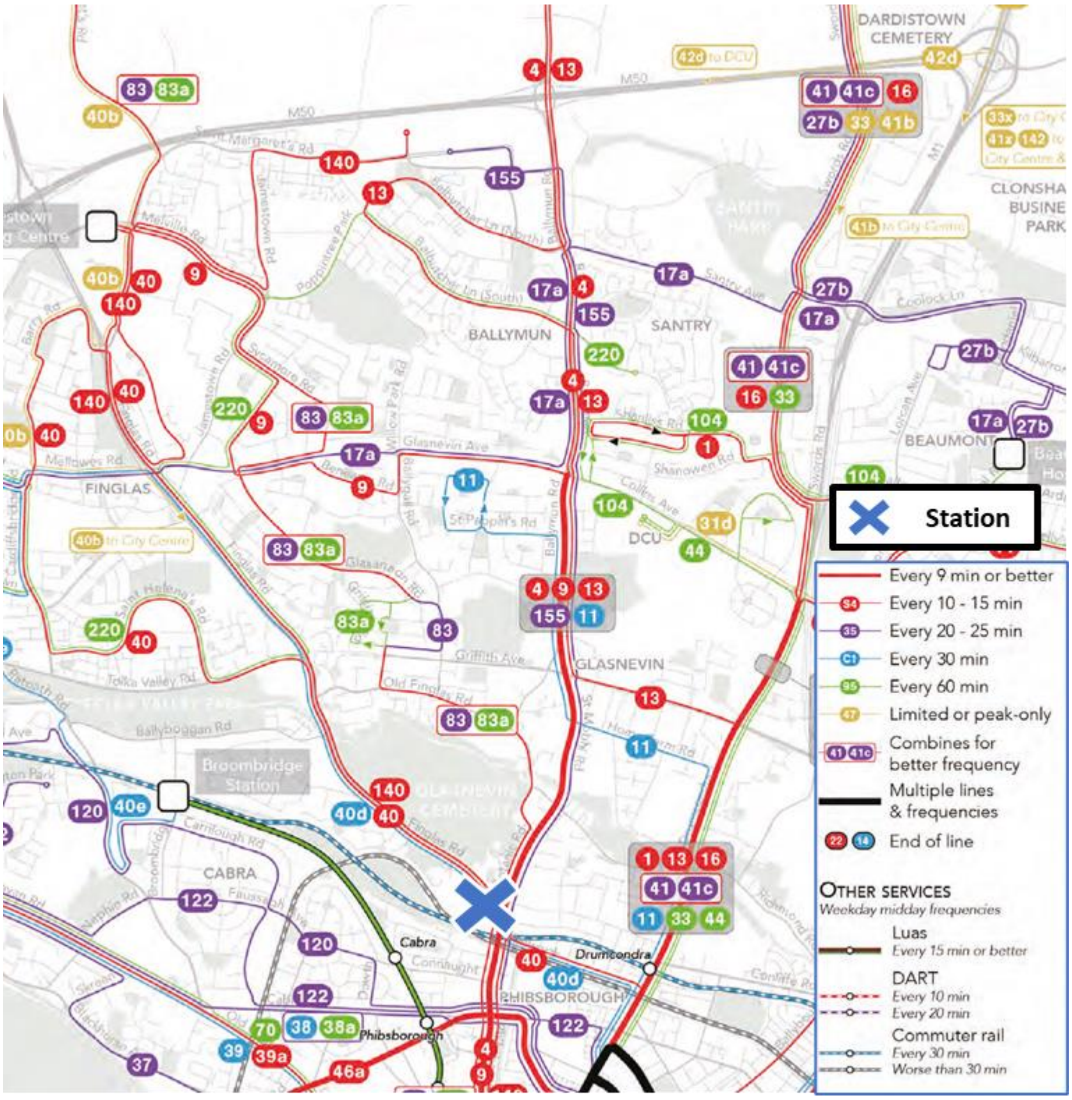
In addition, the Draft Plan highlights the role the proposed Project will play in delivering opportunities for developing the public ream around proposed stations.

3. Baseline Conditions

This section describes the existing receiving environment within the vicinity of the Glasnevin Station and the wider environs, and identifies the future receiving environment for all modes of transport if conditions are planned to change in advance of the construction of the Project, such as the delivery of other proposed infrastructure projects.

3.1 Existing Public Transport

Figure 3.1 shows the existing bus services in the surrounding area. The area surrounding the Glasnevin Station is served by several bus services with less than 15min frequencies, many of which have stops in close proximity to the station. Within a 600m buffer from the station there are 16 bus stops located along the R108, Whitworth Road, Botanic Road (see Figure 3.2). The nearest bus stop is located on R108, east of the proposed station serving routes 4 (Monkstown Avenue to Harristown); 9 (Charlestown towards Limekiln Avenue); 40 (Charlestown to Liffey Valley Shopping Centre); 40b (Parnell Street to Toberburr); 40d (Parnell Street to Tyrrelstown); 83 (Harristown towards Kimmage); 140 (Ballymun (Ikea) towards Palmerston Park) and 155 (Ballymun to Bray).



(Base Source: www.busconnects.ie)

Figure 3.1: Existing Public Transport Provision at Glasnevin Station

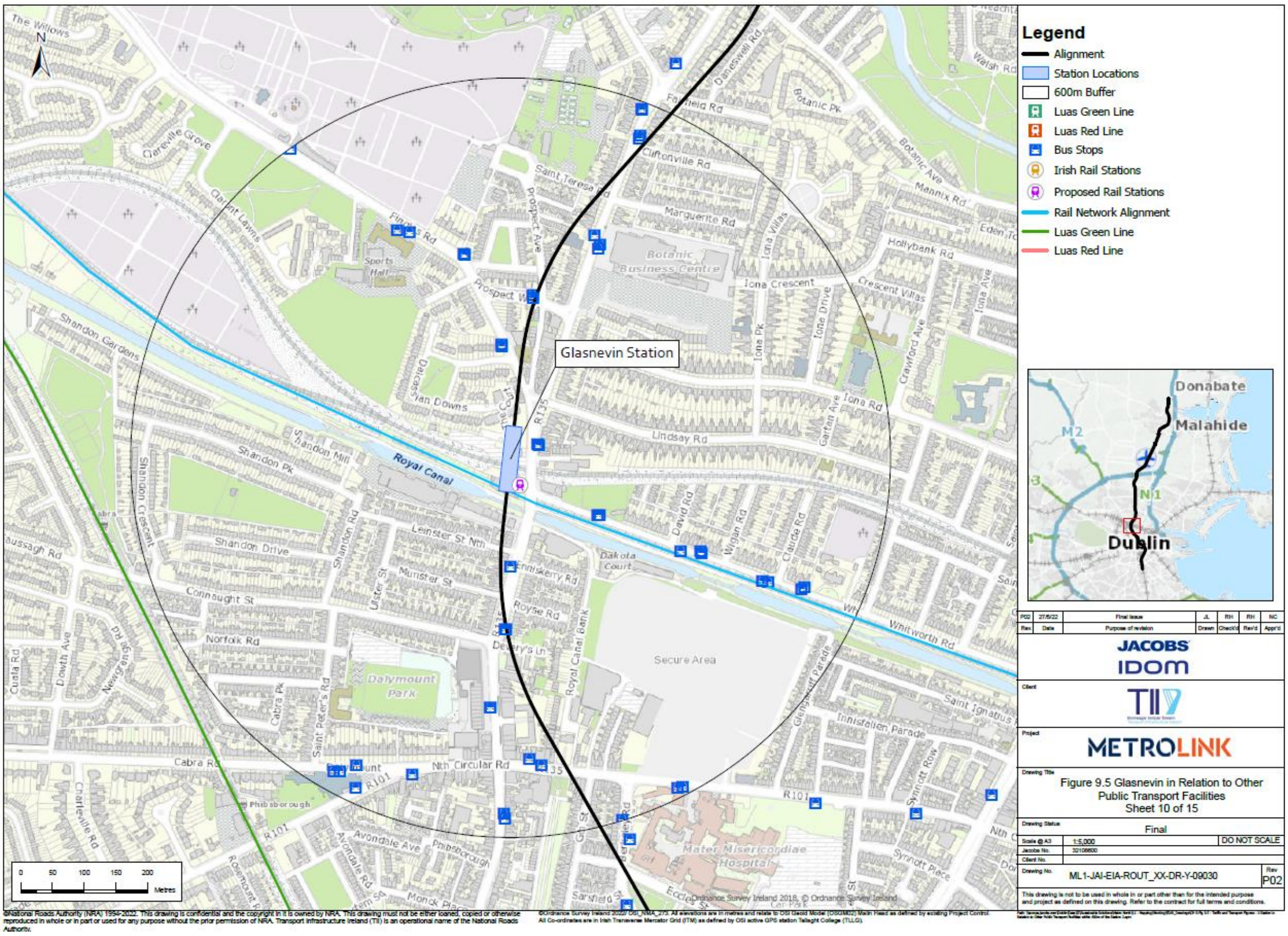
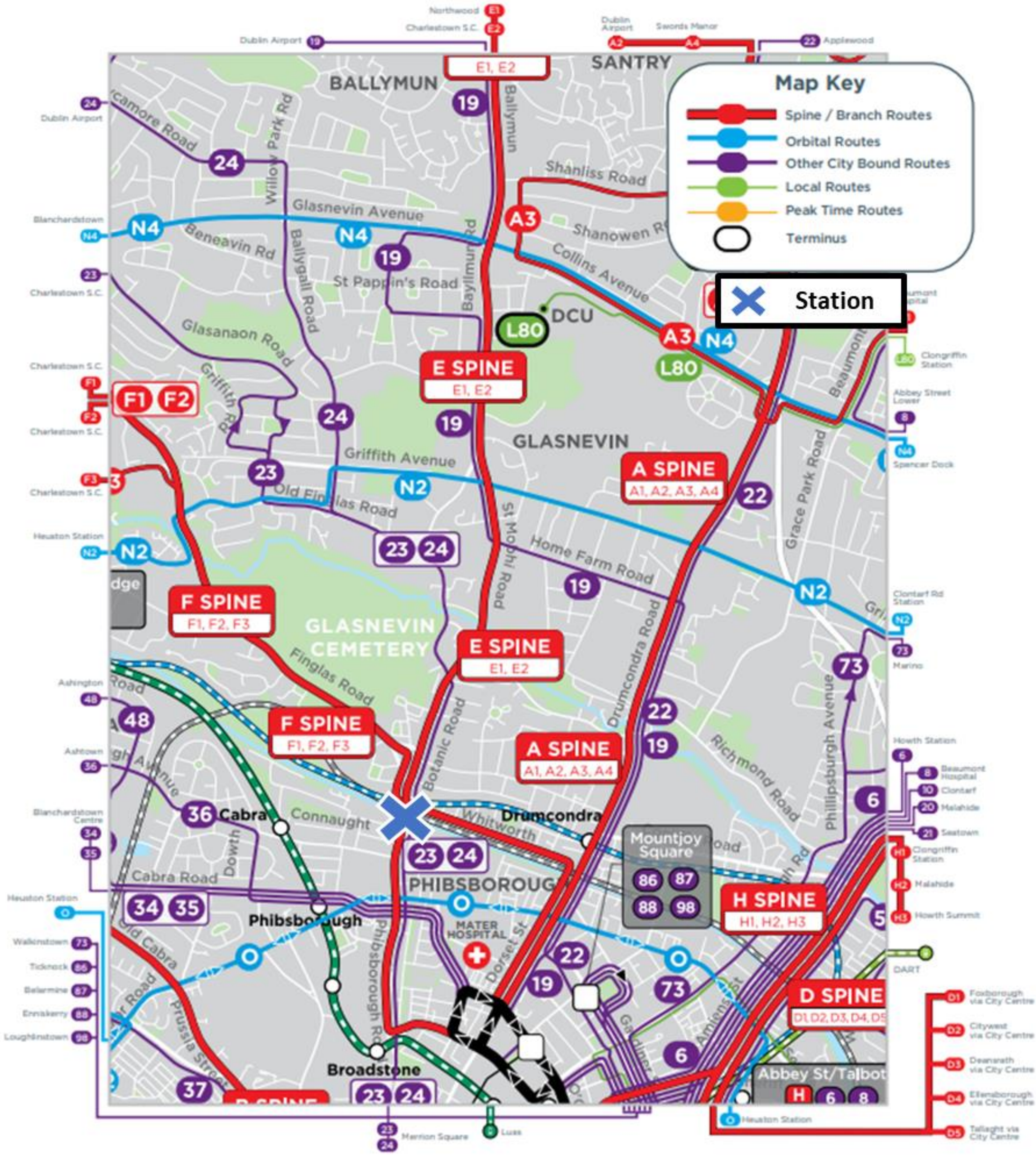


Figure 3.2: Existing Public Transport Provision at Glasnevin Station (600m buffer)

3.2 Future Receiving Environment – Public Transport Network

The Glasnevin Station is also located along the Bus Network Redesign proposed E1 and E2 Spine, and F1, F2 and F3 spines as shown in Figure 3.3 and in close proximity to 'Other city bound routes'. Routes E1 and E2 will have frequencies of 8 to 10min on weekdays giving the Spine E a combined frequency of 5 minutes during weekdays. City bound routes 23 and 24 (Glasnevin – Merrion Square) will have a combined frequency of 10 minutes during weekdays and up to 15 minutes during weekends.



(Base Source: www.busconnects.ie)

Figure 3.3: Proposed Bus Network Redesign around Glasnevin Station

3.3 Existing Road Network

The station is served by the R108, running directly from the M50 Junction 4 south to the station. Furthermore, the R135 merges with the R108 just north of the station, connecting areas further north-west, such as Finglas and Ballymun, to the station. The N1 (to the east of the station) and smaller roads such as Whitworth Road, Lindsay Road and Iona Road connect nearby residential areas to Glasnevin station, as shown in Figure 3.4.

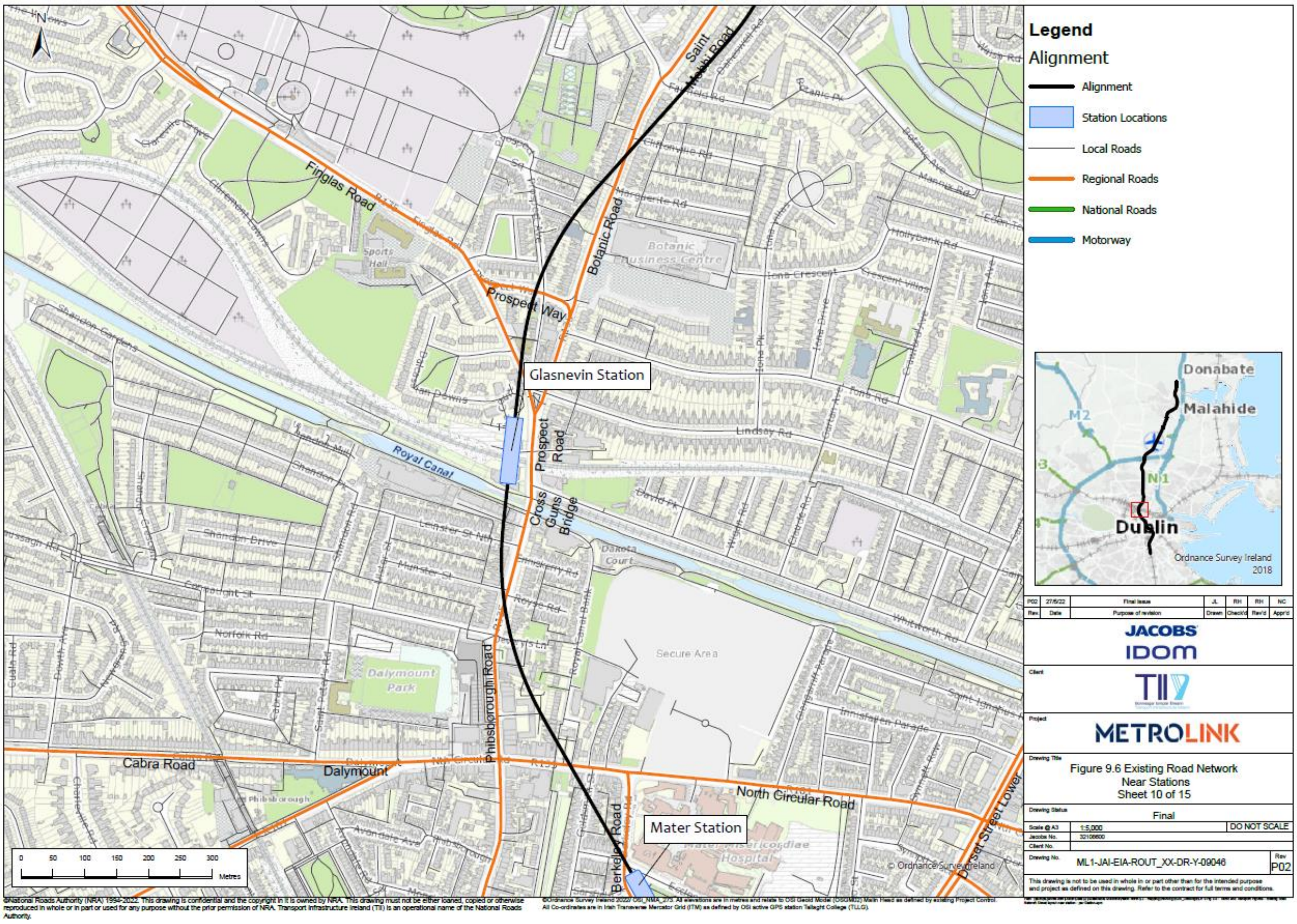


Figure 3.4: Street layout near Glasnevin Station

The R108 is a two-way dual carriageway and is part of the regional road network of the GDA. In its most proximate section to the proposed Glasnevin Station, the R108 has an approximate width of 11m and comprises of two north bound traffic lanes, which merges into one traffic lane and one shared bus and cycle lane, and two southbound traffic lanes, one sharing a bus lane. North of the proposed Glasnevin Station, the road splits into two one-way systems.

Whitworth Road Is a two-way single carriageway to the east of the station of approximately 10m in width. There are no bus or cycle lanes present on this road.

Lindsay Road is a two-way single carriageway residential road of approximately 8m in width, however there is car parking along both sides of the road reducing the width. There are no bus or cycle lanes present on this road.

3.3.1 Junction Turning Count Locations

The Data Collection Report (ML1-JAI-TRA-ROUT_XX-RP-Y-00023) details the methodology and specification of traffic surveys undertaken for the proposed Project. The survey locations relevant to Glasnevin Station are shown in Table 3.1. Vehicle classifications used for the survey were Car, LGV, OGV1, OGV2, PSV, Motorcycle and Pedal Cycle. PCUs values were also reported using appropriate conversion factors for each vehicle classification. The resulting PCU values from the survey results have been used for the LinSig modelling.

Demand flows were obtained from the turning counts and queue data from either observation from online traffic flow data sources or queue count surveys. Demand data has been used in all the assessment work undertaken.

Table 3.1: Survey Locations around Glasnevin Station

Junction	Type of Survey
R108/Lindsay Road Signalised Junction	Classified Junction Turning Count (CJTC)
R135/Whitworth Road Signalised Junction	CJTC

3.3.2 Base Traffic Flows

The 2018 base traffic flows for the AM and PM peak periods, for the junctions detailed in Table 3.1, are provided within Appendix A Traffic Flow Diagrams. The surveyed base traffic flows have also been utilised as traffic demand inputs for the VisWalk pedestrian modelling.

R108 / Whitworth Road junction is a 3-arm signal-controlled junction. LinSig Version 3 has been utilised to assess the operation and performance of existing signal junction.

The results for the LinSig analysis of the junction are summarised in Table 3.2 for the 2018 Base Weekday AM and PM peak hours respectively. The junction capacity and operational performance are summarised as the Degree of Saturation (DoS) and the Mean Max Queue (MMQ).

Table 3.2 – LinSig Model Result Summary – Prospect Road / Whitworth Road – 2018 Observed Flows

Arm	Lane	2018 Base Weekday AM Peak		2018 Base Weekday PM Peak	
		DoS [%]	MMQ [PCU]	DoS [%]	MMQ [PCU]
Prospect Road Southbound	Ahead / Left	32.2%	5.8	37.8%	6.4
	Ahead	65.3%	18.2	68.4%	20.1
Whitworth Road	Right	65.9%	9.4	85.9%	17.1
Prospect Road Northbound	Ahead	3.7%	0.5	3.4%	0.5
	Ahead	53.4%	12.8	77.8%	26.1
Practical Reserve Capacity (PRC)		36.5%		4.8%	
Total Delay (pcuHr)		10.84		19.99	

Table 3.2 results indicate that R108 Prospect Road / Whitworth Road junction operates within capacity under 2018 base traffic flow conditions, with acceptable levels of queueing on all approaches.

3.3.3 Forecast Traffic Growth

Forecast traffic growth rates have been obtained from the Eastern Regional Model (ERM) for future years 2035, 2050 and 2065, for the appropriate scenario.

3.4 Future Receiving Environment – Road Network

As part of the Bus Connects Core Bus Corridor proposals, the existing cycle lanes on Botanic Road will be upgraded to segregated cycle tracks. On Prospect Way, it is proposed to retain the bus lane and reduce from two general traffic lanes to a single traffic lane. This will accommodate a two-way cycle track on the northern side.

On Prospect Road, the existing layout with a bus lane and two traffic lanes will be reduced to a bus lane and single traffic lane from Prospect Way to Lindsay Road. Between Lindsay Road and North Circular Road, the Phibsborough Road will accommodate a bus lane and a general traffic lane in each direction.

3.5 Existing Pedestrian Network

There is currently no pedestrian crossing present at the proposed station entrance. There is a lack of pedestrian and cycle crossing facilities north of where the R108 intersects Prospect Avenue travelling towards the station. Under DCC's pedestrian hierarchy, Prospect Road is considered to be an 'Historic Approach' to Dublin City Centre.

St Vincent's Secondary School is located on Finglas Road, north of Glasnevin Station, within a 10-minute walking boundary. Footways are approximately 3m in width on Finglas Road however there are a lack of pedestrian crossings at side street junctions.

Footways exist only on the eastbound side of Whitworth Road as the canal and train track runs along the westbound side. Junctions on Whitworth Road lack tactile paving and dropped kerbs.

3.5.1 Pedestrian Link Counts

The Data Collection Report (ML1-JAI-TRA-ROUT_XX-RP-Y-00023) details the locations around Glasnevin Station where pedestrian surveys were undertaken.

3.5.2 Baseline Pedestrian Accessibility Review

A baseline accessibility assessment has been undertaken to establish existing walking provision relevant to the proposed Glasnevin Station. Catchment maps prepared for the accessibility analysis for walking are based in two criteria, the average speed for each mode and the existing road network. Therefore, maps do not reflect existing access restrictions for private roads and motorised roads.

Figure 3.5 illustrates a 5min walking, 10min walking, and 15min walking catchment from the Glasnevin Station. Table 3.3 below lists the local amenities within the 5min walking, 10min walking and 15min walking from the Glasnevin Station.

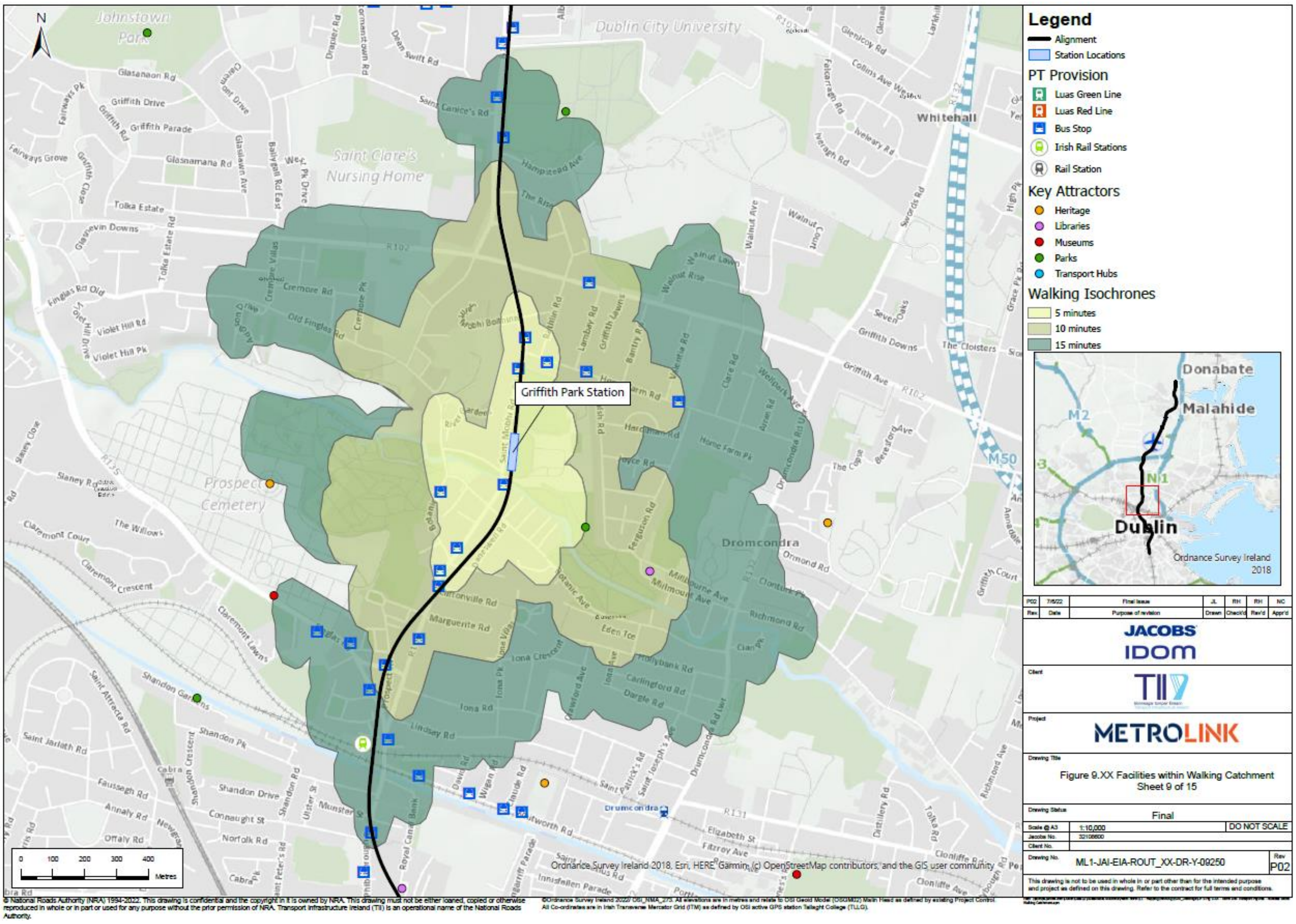


Figure 3.5: Glasnevin Station Walking Catchment Area

Table 3.3: Local facilities and amenities within walking catchment area

Facilities within 5min walking	Facilities within 10min walking	Facilities within 15min walking
Brian Boru Pub	Lindsay Road residential area	Whitworth Medical Centre
The Bernard Shar pub	Iona Road residential area	Dalymount Park
Dalcassian Downs	St. Vincent's Secondary School	Shandon Pitch and Putt Club
Glasnevin Family Practice	Prospect Montessori School	Clareville Day Care Centre
St. Vincent's Primary School	Prospect Square	Iona Centre National Council for the Blind
		St. Columba's School
		Lindsay Road National School
		National Botanical Gardens

A pedestrian comfort assessment has been undertaken to assess the impact of the baseline volume of pedestrians on the network surrounding Glasnevin station, as shown in Figure 3.6. Links were assessed against DCC guidance in the first instance, and then against the TfL Pedestrian Comfort Calculator to determine the level of comfort for the available width. The full methodology adopted is detailed in the Overall Project TTA. The baseline assessment shows that all footway provisions comply with DCC guidance and are deemed 'Comfortable'.

The proposed street level layout at Glasnevin Station provides for pedestrian footways on both sides of R108 Prospect Road, with pedestrian crossing facilities to the north and south of the station entrance. Interchange between the proposed Project and the DART lines occurs within the station box and therefore the large volume of interchanging passengers will not utilise the external pedestrian network.

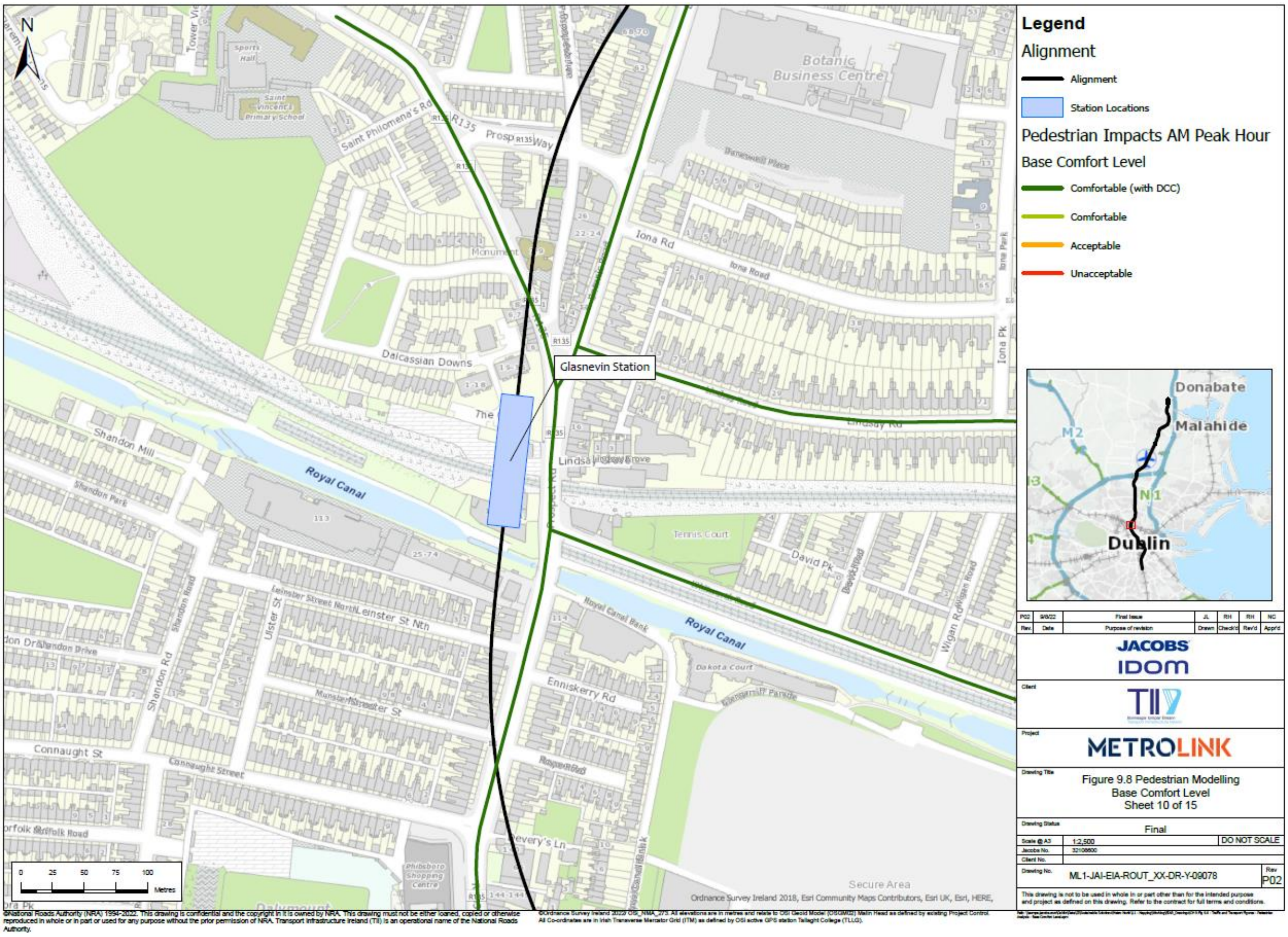


Figure 3.6: Pedestrian Comfort Assessment at Glasnevin - Baseline

3.6 Future Receiving Environment – Pedestrian Network

As part of the Bus Connects Core Bus Corridor proposals, the existing northern railway bridge on Phibsborough Road will be widened on the eastern side and a new footbridge will be provided across the Docklands Railway Line between Whitworth Road and the Royal Canal. At Cross-Guns Bridge the road layout will be adjusted to widen the footpath on the western side. A new footbridge will also be provided over the Royal Canal at Royal Canal Bank to connect the cycle routes at this location.

3.7 Existing Cycle Network

Figure 3.7 illustrates Glasnevin Station within the GDA Cycle Network. The R108 is a primary route within the network, served by a feeder route on Iona Road and a Primary route on Whitworth Road.

The R108 provides stretches of both on-road advisory cycle lanes and bus lanes which are shared with cyclists. This is considered to be an area of high sensitivity for cyclists with Level B Quality of Service.

The R135 provides a shared use path for cyclists and pedestrians southbound from Ballyboggan Road to Claremont Crescent, where cyclists join the carriageway on an advisory cycle lane. Similarly, cyclists travelling northbound from Glasnevin Station will use an advisory cycle lane before reaching St Vincent's Secondary School where they join a shared used path for the remainder of the R135 (within the 10-minute radius). Sheffield cycle racks are present opposite the Glasnevin Cemetery Museum, along the R135.

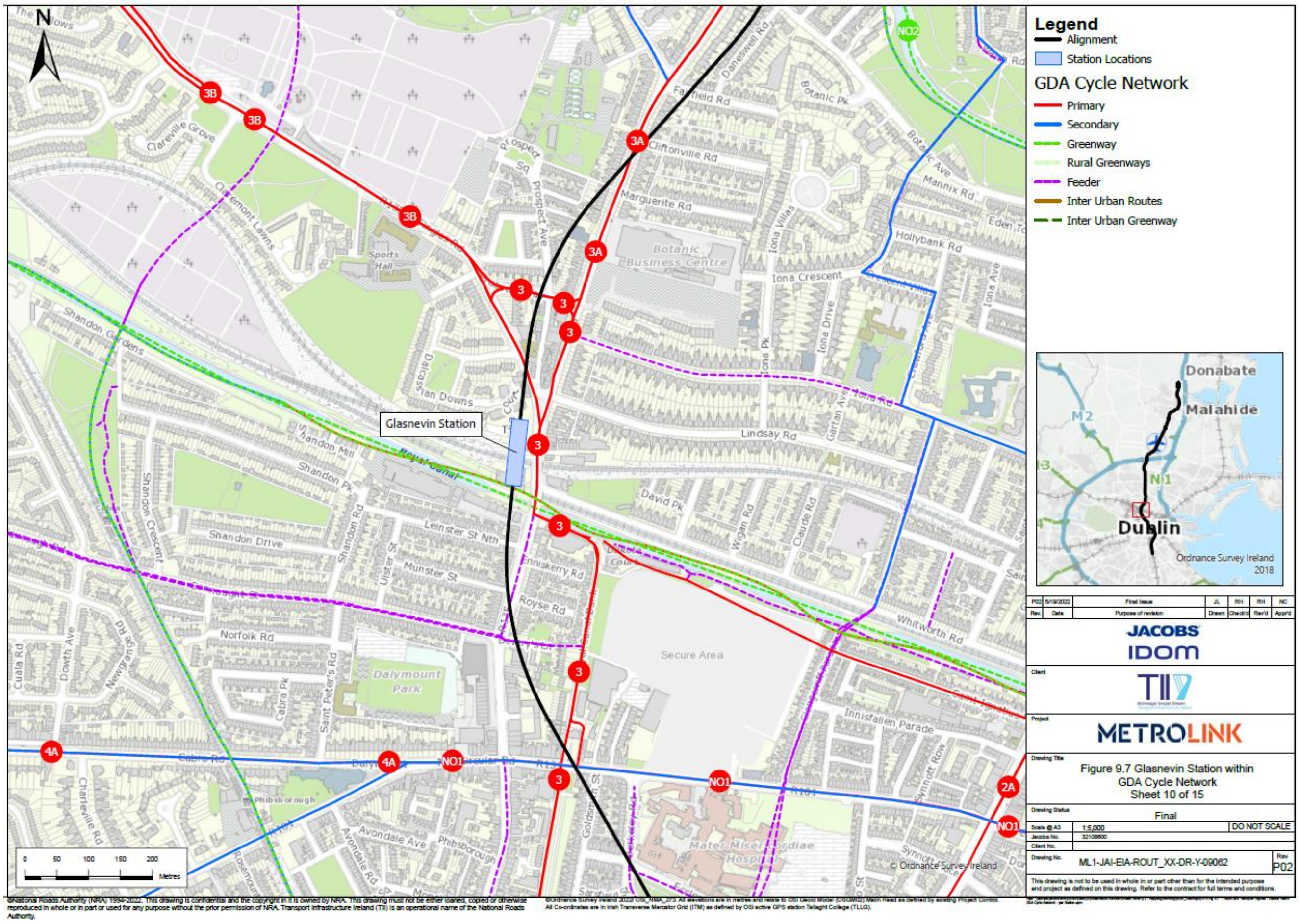


Figure 3.7: Proposed station location within proposed GDA Cycle Network

3.7.1 Baseline Cycle Accessibility Review

A baseline accessibility assessment has been undertaken to establish existing cycling provision relevant to the proposed Glasnevin Station. Catchment maps prepared for the accessibility analysis for cycling are based in two criteria, the average speed for each mode and the existing road network. Therefore, maps do not reflect existing access restrictions for private roads and motorised roads.

Figure 3.8 illustrates a 5min cycling and 10min cycling catchment from Glasnevin Station, and the location of existing bike racks in close proximity to the station.

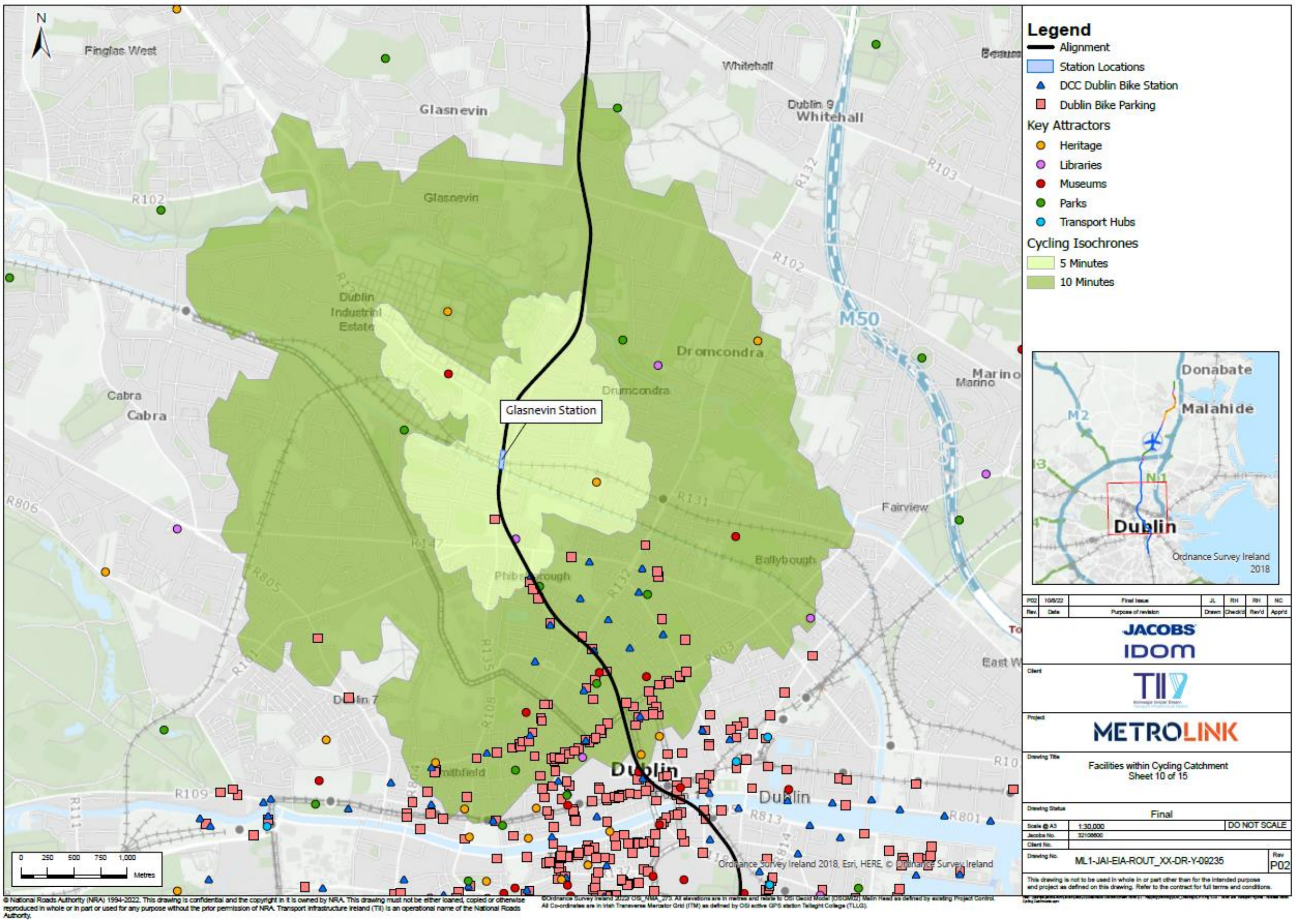


Figure 3.8: Glasnevin Station Cycling Catchment Area

Table 3.4 lists local amenities within this catchment.

Table 3.4: Local facilities and amenities within cycling catchment area

Facilities within 5min cycling	Facilities within 10min cycling
National Botanic Gardens	Dublin Industrial Estate
Dalymount Park	Croke Park
St. Vincent’s Secondary School	Mater Hospital
Lindsay Road National School	Glasnevin Cemetery
Glasnevin Cemetery Museum	Griffith Park
St. Vincent’s Basketball Club	DCU St. Patrick’s Campus
	CLG Na Fianna
	Bon Secours Hospital Dublin

3.8 Future Receiving Environment – Cycle Network

As part of the Bus Connects Core Bus Corridor proposals, the existing cycle lanes on Botanic Road will be upgraded to segregated cycle lanes. On Prospect Way, it is proposed to retain the bus lane and reduce from two general traffic lanes to a single traffic lane. This will accommodate a two-way cycle track on the northern side of the road. A two-way cycle track will continue along the eastern side of Prospect Road to Royal Canal, where the cycle route will extend to Royal Canal Bank bypassing Phibsborough Village.

Between Lindsay Road and North Circular Road, the Phibsborough Road will accommodate a bus lane and a general traffic lane in each direction, but there is insufficient space for cycle tracks.

A new footbridge will be provided over the Royal Canal at Royal Canal Bank to connect the cycle routes at this location.

4. The Proposed Project – Glasnevin Station

4.1 Site Location and Development Context

The proposed Glasnevin Station is located on the west of the R108, adjacent to the Whitworth Road and just north of the Royal Canal. The site is located on the current Brian Boru pub and associated car park, extending north with the boundary of a residential unit on the Dalcassian Downs and to the south over the Maynooth and Kildare rail lines. Figure 4.1 below illustrates the location of the proposed development.

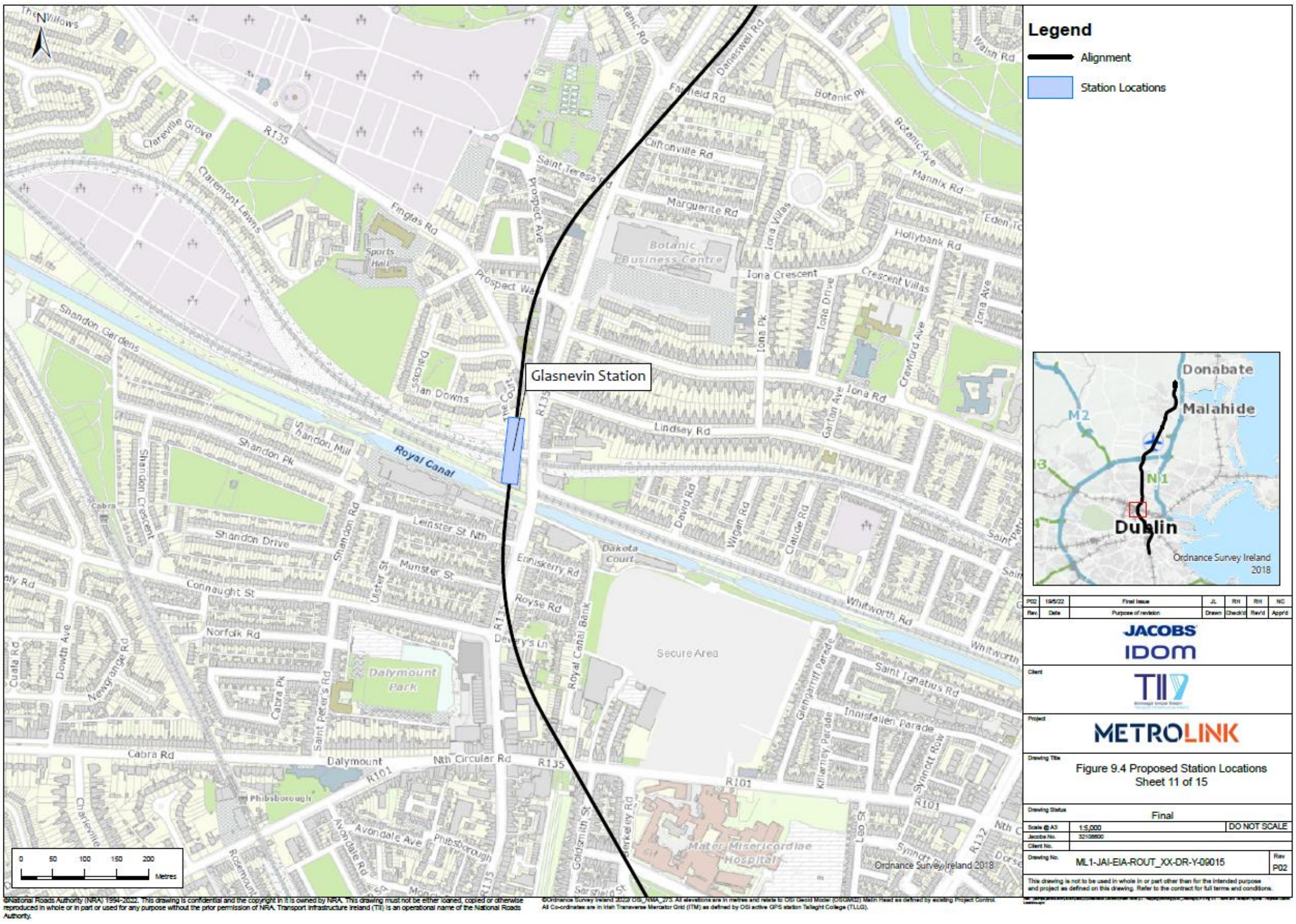


Figure 4.1: Proposed Site Location

The layout of the Glasnevin station at street layout is shown in Figure 4.2. The street layout proposal shows the Bus Network Redesign proposals which involve the provision of one bus and one general traffic lane in both directions, with a two-way cycle lane on the east side of the road.

The proposed Project would involve the provision of a new toucan crossing just north of the station and a new access to a potential taxi drop-off area along the northern boundary of the site. There is also a proposal for a dedicated cycle link to a cycle parking area.

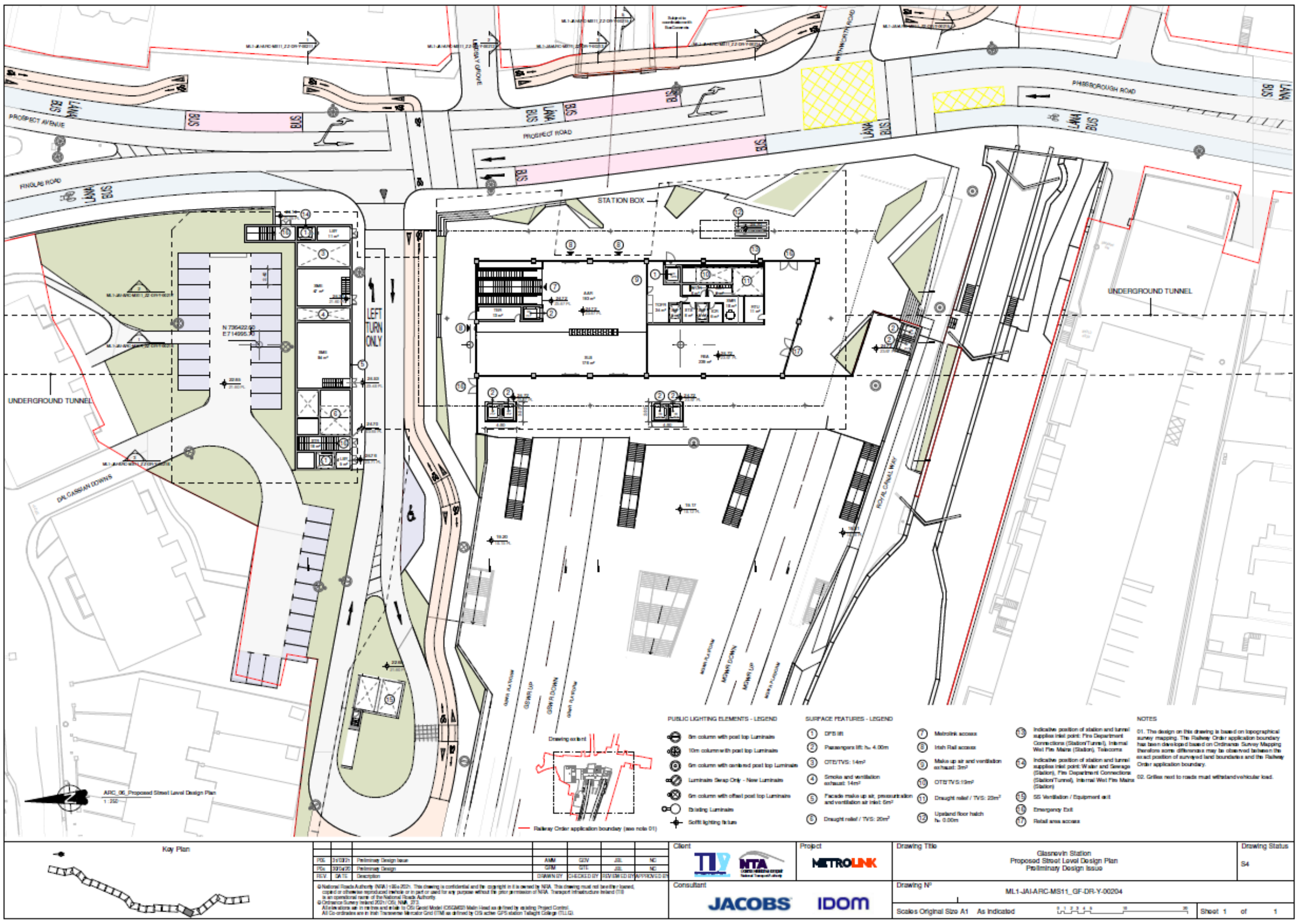


Figure 4.2:- Glasnevin Station Layout

With reference to Figure 4.2, access to the station from street level is gained from a partially covered plaza that allows passenger flows to be managed for both modes of railway transport, the proposed Project and heavy rail, this will have two access points.

Vertical access for the Project is achieved via a bank of stairs and escalators on the north side of the plaza. Elevators or lifts are provided for mobility impaired persons at various locations on the street level.

5. Trip Generation / Trip Attraction

5.1 Operational Phase

Traffic estimates associated with the Glasnevin Station Operational Phase will be established by utilising the National Transport Authority's (NTA) East Regional Model (ERM). The ERM provides a comprehensive representation of multi-modal travel patterns across the Greater Dublin Area and is a suitable tool for the testing and appraisal of the proposed Project.

5.1.1 Passenger Boarding and Alighting

Passenger demand modelling has been used to predict the numbers of passengers boarding and alighting at each station, and the resulting passenger load on the Project, for the years 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). The scenarios considered for assessment for each of the years 2035, 2050 and 2065 are outlines in Table 5.1.

Table 5.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project.
Do Minimum Scenario	Committed transport schemes in the absence of the Project.
Do Something - Scenario A	Scenario with the Project and committed transport schemes only.
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for Opening year (2035) and planned schemes under the Transport Strategy for the GDA for the Design Year (2050) and the Forecast Year (2065).

5.1.1.1 Boarding and Alighting Volumes

Table 5.2 to Table 5.7 show boarding, alighting and interchange numbers for the Glasnevin Station at different peak periods along with the destination and origins of passengers in the AM Peak. All data has been retrieved from the ERM developed by the NTA. Data in this section was obtained for the busiest hour within each of the following peak periods:

- AM: busiest hour between 07:00 – 10:00;
- LT (lunch time): busiest hour between 10:00 – 13:00;
- SR (school run): busiest hour between 13:00 – 16:00; and,
- PM: busiest hour between 16:00 – 19:00.

Figure 5.1 presents the volume of boarding and alighting passengers at Glasnevin Station over the 12hr peak period (07:00-19:00) in both Scenario A and Scenario B. Scenario B has the highest volume of boarding and alighting passengers in 2035, with 9,000 passengers boarding and 10,200 alighting. However, Scenario A has the highest volume of passengers in both 2050 and 2065, reaching over 11,600 boarding passengers and 9,500 alighting passengers in 2065.

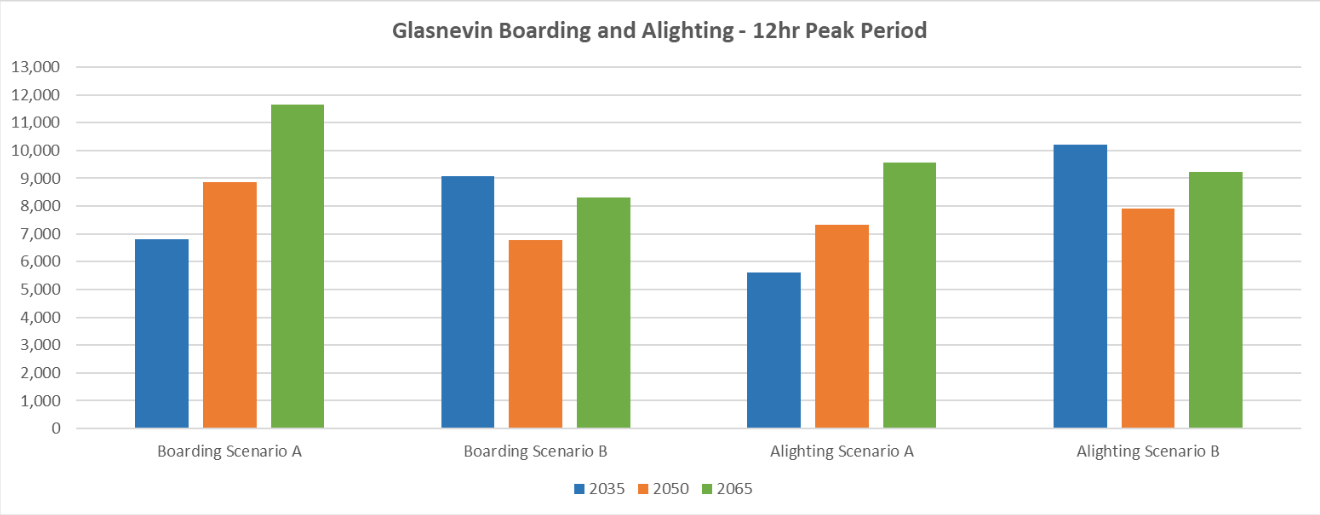


Figure 5.1: Glasnevin 12hr Boarding and Alighting in Scenario A and Scenario B

5.1.2 Boarding and Alighting Volumes: Scenario A

Table 5.2 to Table 5.4 below highlight the boarding and alighting passenger numbers for Glasnevin Station in Scenario A.

During the Opening Year 2035. Estimations indicate that the morning peak will experience the highest number of boarding passengers with the southbound as the busiest direction. In this direction, 1,176 passengers will board MetroLink vehicles at the Glasnevin Station during the AM peak hour, and 204 during the PM peak. The highest number of passengers alighting at the Glasnevin Station will be 744 during the PM peak hour in the northbound direction.

Table 5.2: Boarding and Alighting Numbers at Glasnevin Station in 2035, Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	678	212	5,327	158	94	3,259	142	136	3,934	319	744	7,783
Southbound	1,176	319	10,870	133	138	3,768	95	147	3,796	204	469	4,047

Source: East Regional Model (ERM)

For the 2050 year, during the AM peak hour, 1,404 southbound passengers and 944 northbound passengers are expected to board MetroLink vehicles at Glasnevin Station. It is estimated that 222 northbound passengers and 431 southbound passengers will alight during the AM peak hour. During the PM peak hour, 452 northbound passengers and 235 southbound passengers will board. It is estimated 896 northbound passengers and 656 southbound passengers will alight at Glasnevin Station.

Table 5.3: Boarding and Alighting Numbers at Glasnevin Station in 2050, Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	944	222	6,669	239	123	4,613	209	158	4,956	452	896	9,612
Southbound	1,404	431	12,862	163	231	5,505	116	219	4,938	235	656	5,054

Source: East Regional Model (ERM)

Estimates indicate that the AM peak hour will experience the highest number of boarding passengers in 2065, with the southbound as the busiest direction. In this direction, 1,795 passengers will board MetroLink vehicles during the AM peak hour compared to 1,282 northbound passengers. The PM peak will experience the highest number of alighting passengers with the northbound as the busiest direction. In this direction, 1,171 passengers will alight from MetroLink vehicles during PM peak hour.

Table 5.4: Boarding and Alighting Numbers at Glasnevin Station in 2065, Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	1,282	251	8,117	330	147	5,599	327	205	6,672	585	1,171	11,838
Southbound	1,795	556	15,386	206	293	6,317	143	289	6,158	274	915	6,324

Source: East Regional Model (ERM)

5.1.3 Boarding and Alighting Volumes: Scenario B

Table 5.5 to Table 5.7 below highlight the boarding and alighting passenger numbers for Glasnevin Station in Scenario B.

For the year 2035, during the AM peak hour, the northbound direction is expected to be the busiest with 1,171 passengers expected to board and travel in this direction. 942 passengers will board MetroLink vehicles and head south, while 256 northbound passengers and 680 southbound passengers will alight. During the PM peak hour, 532 northbound passengers are expected to board while 906 northbound passengers and 945 southbound passengers will alight.

Table 5.5: Boarding and Alighting Numbers at Glasnevin Station in 2035, Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	1,171	256	5,366	367	106	3,350	338	217	4,133	532	906	7,153
Southbound	942	680	10,046	128	436	3,778	107	522	3,642	212	945	3,608

Source: East Regional Model (ERM)

Table 5.6 shows the boarding and alighting numbers for the 2050 year. During the AM peak hour, it is expected that 1,038 passengers will board MetroLink vehicles at Glasnevin Station and head north, while 373 passengers will board and head south. 598 southbound passengers and 131 northbound passengers are expected to alight.

During the PM peak hour, 408 passengers are expected to board and head north while 94 passengers will board and head south. 351 northbound passengers and 1,011 southbound passengers are expected to alight at Glasnevin Station.

Table 5.6: Boarding and Alighting Numbers at Glasnevin Station in 2050, Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	1,038	131	6,792	406	67	4,966	358	98	5,048	408	351	8,724
Southbound	373	598	10,976	65	412	5,257	55	471	4,881	94	1,011	5,049

Source: East Regional Model (ERM)

For the year 2065, during the AM peak hour, it is estimated 1,296 northbound passengers and 434 southbound passengers will board MetroLink vehicles at Glasnevin Station. During the PM peak hour, 1,092 southbound passengers are expected to alight at Glasnevin Station compared to 413 northbound passengers alighting.

Table 5.7: Boarding and Alighting Numbers at Glasnevin Station in 2065, Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	1,296	137	7,760	466	75	5,807	469	103	6,550	523	413	9,616
Southbound	434	748	13,637	74	504	6,219	60	598	5,828	102	1,092	5,424

Source: East Regional Model (ERM)

5.1.4 Public Transport Interchange Volumes

As part of the Bus Network Redesign proposals, the Glasnevin Station will be served by the proposed E1 and E2 Spine as well as the F1, F2 and F3 Spines. It is also in close proximity to other local routes such as the 23 and 24. More information on the future public transport network around the station can be found in Section 3.2 of this document.

The following tables present the volume of passengers interchanging to and from the Project with other public transport modes in Scenario A and Scenario B. The majority of passengers are interchanging between the Project and other public transport networks. With the station’s proximity to Drumcondra train station, the largest volumes of interchange are from the Rail and DART network in the AM peak hour, and to the Rail and DART network in the PM peak hour.

Table 5.8: Transfers To/From Other Public Transport Modes in Scenario A

Scenario A									
Year	Peak	Boarding				Alighting			
		First Boarding	From Bus	From Rail/DART	From Luas	Final Stop	To Bus	To Rail/DART	To Luas
2035	AM	343	528	984	-	237	116	178	-
	PM	167	158	197	-	276	228	708	-
2050	AM	386	637	1324	-	267	123	263	-
	PM	192	198	297	-	309	266	977	-
2065	AM	451	787	1838	-	316	139	352	-
	PM	221	230	407	-	366	352	1368	-

Source: East Regional Model (ERM)

Table 5.9: Transfers To/From Other Public Transport Modes in Scenario B

Scenario B									
Year	Peak	Boarding				Alighting			
		First Boarding	From Bus	From Rail/DART	From Luas	Final Stop	To Bus	To Rail/DART	To Luas
2035	AM	250	298	1564	-	193	130	614	-
	PM	131	90	523	-	207	316	1327	-
2050	AM	242	183	986	-	226	70	434	-
	PM	153	61	287	-	209	234	919	-
2065	AM	265	207	1259	-	251	83	552	-
	PM	171	89	365	-	223	180	1101	-

Source: East Regional Model (ERM)

5.1.5 Distribution of Passengers Boarding and Alighting

The main origins of passengers in the AM peak are the residential areas immediately surrounding the station. The modelling indicates that passenger will come from walking distances of more than 15 mins to the east of the station and span as far as the Drumcondra area. Passenger demand to the west is not indicated to span as far as the east but will include existing residential areas such as Cabra.

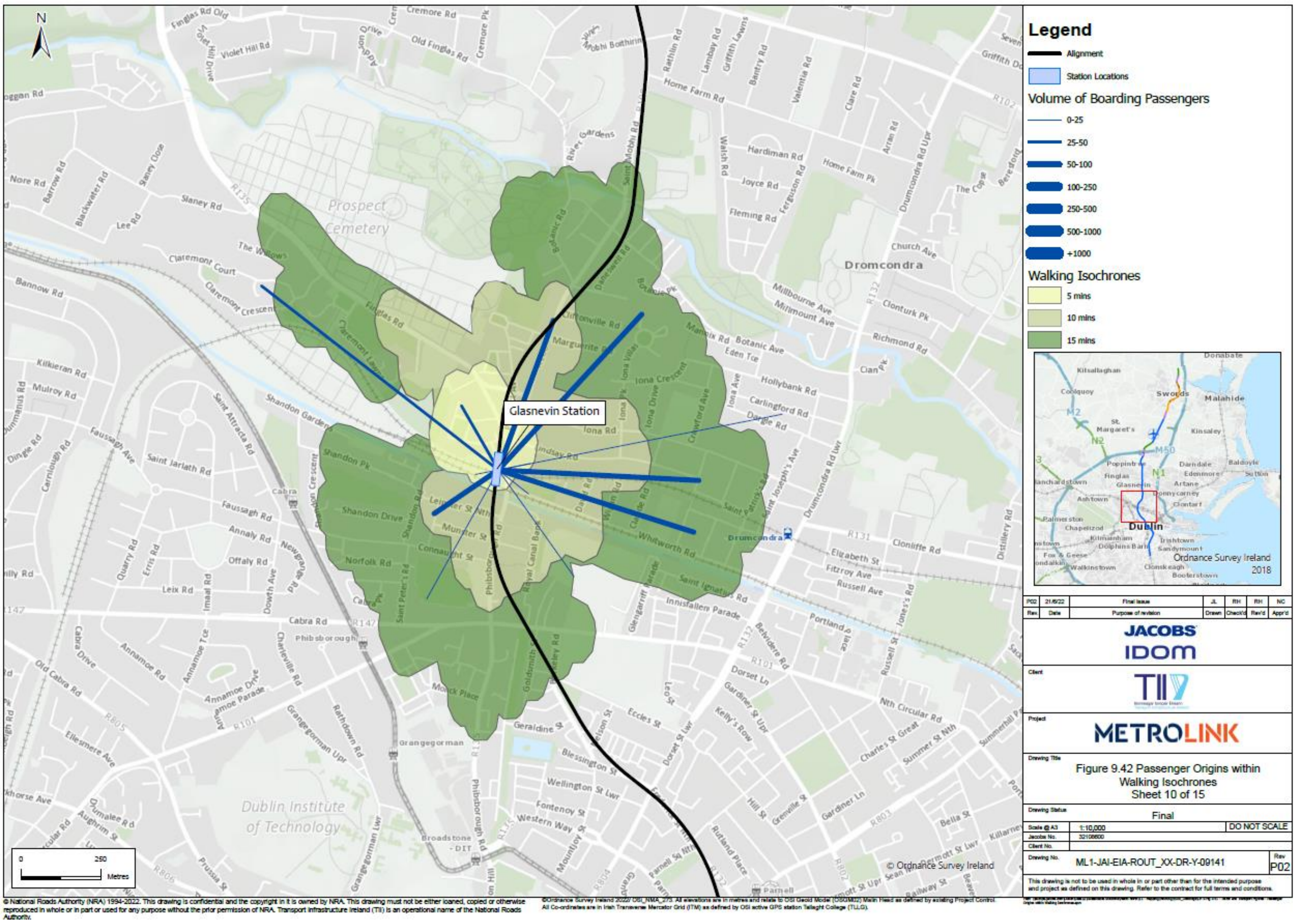


Figure 5.2: Origin of Boarding Passengers During AM peak hour and Walking Catchment Areas

The main destinations for disembarking passengers in the AM peak are St. Vincent's School, north of the station and the Phibsborough Shopping Centre, south of Glasnevin Station.

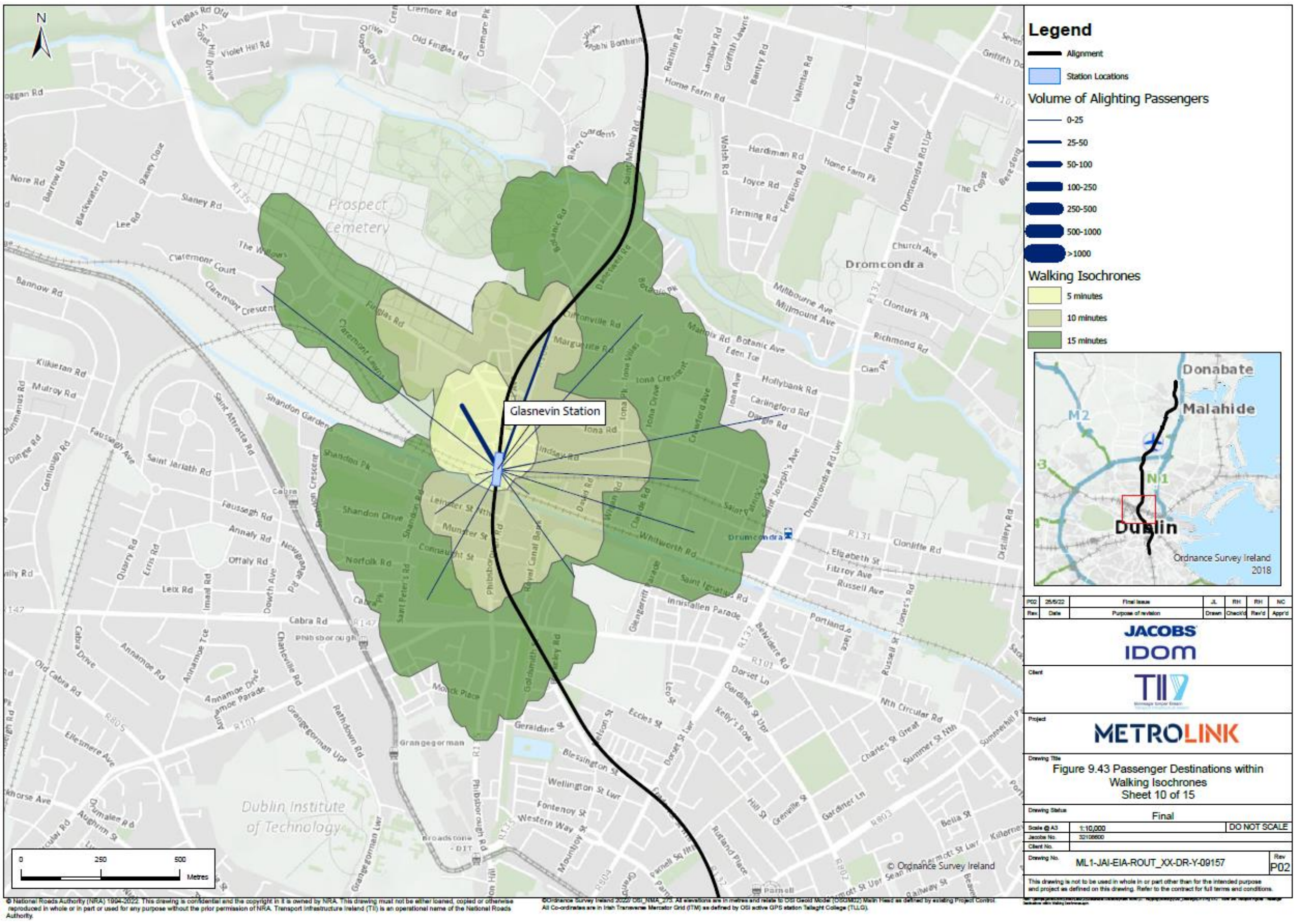


Figure 5.3: Destination for Alighting Passengers During AM peak hour and Walking Catchment Areas

6. Assessment of Impacts

6.1 Operational Phase

As part of the assessment of impacts associated with the Operational Phase of the proposed Project, the impact of the proposed Glasnevin Station on all modes of transport has been examined – public transport (PT), general traffic, walking and cycling.

6.1.1 Public Transport Assessment

The ERM has been interrogated to estimate the reduction in private car trips associated with the origin and destination trips in the zones around Griffith Park Station. The modal split between public transport, active travel, and car users in Scenario A and Scenario B are shown in Figure 6.1 and Figure 6.2 respectively. These are based on trips made from zones within a 2km catchment of the station over a 12-hour period.

In Scenario A, PT mode share is estimated to increase by up to 2 percentage points (including the Project) compared to the Do Minimum, bringing potential PT mode share up to 34% in 2065. Car mode share is estimated to decrease by up to 1 percentage point compared to the Do Minimum, bringing it down to 24% by 2065. Active modes mode share, which includes walking and cycling, is estimated to decrease by up to 1 percentage points compared to the Do Minimum, to 42% by 2065. Overall, there will be an expected shift towards sustainable modes (PT and active modes), and a reduction in car mode share for trips made from zones around Glasnevin Station.

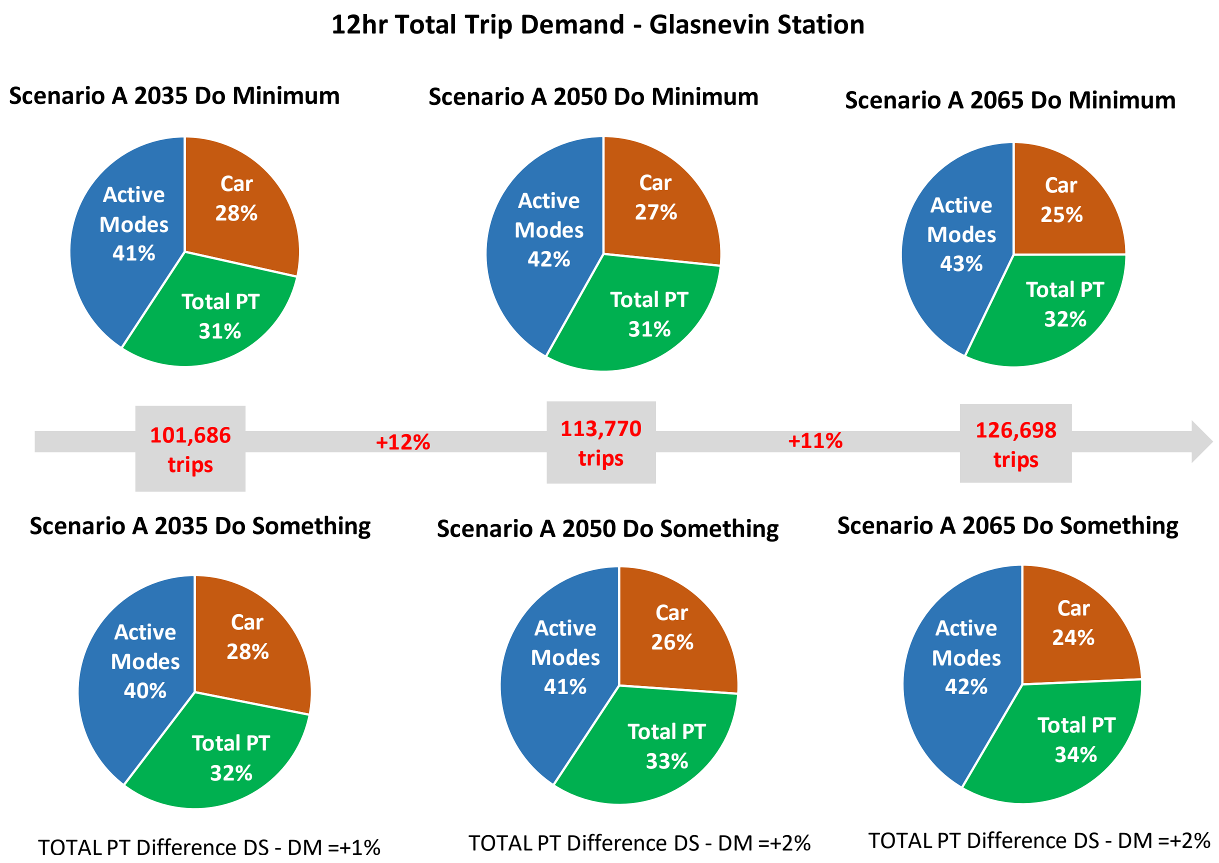


Figure 6.1: Mode Share of Trips from Zones around Glasnevin Station - Scenario A

In Scenario B, PT mode share is estimated to increase by 1-2 percentage points (including the Project) compared to the Do Minimum, bringing potential PT mode share up to 36% in 2065. Car mode share is estimated to decrease by approximately 1 percentage point compared to the Do Minimum, bringing it down to 24% by 2065. Active modes mode share, which includes walking and cycling, is estimated to decrease by up to 1 percentage points compared to the Do Minimum, to 40% by 2065. Overall, there will be an expected shift towards sustainable modes (PT and active modes), and a reduction in car mode share for trips made from zones around Glasnevin Station.

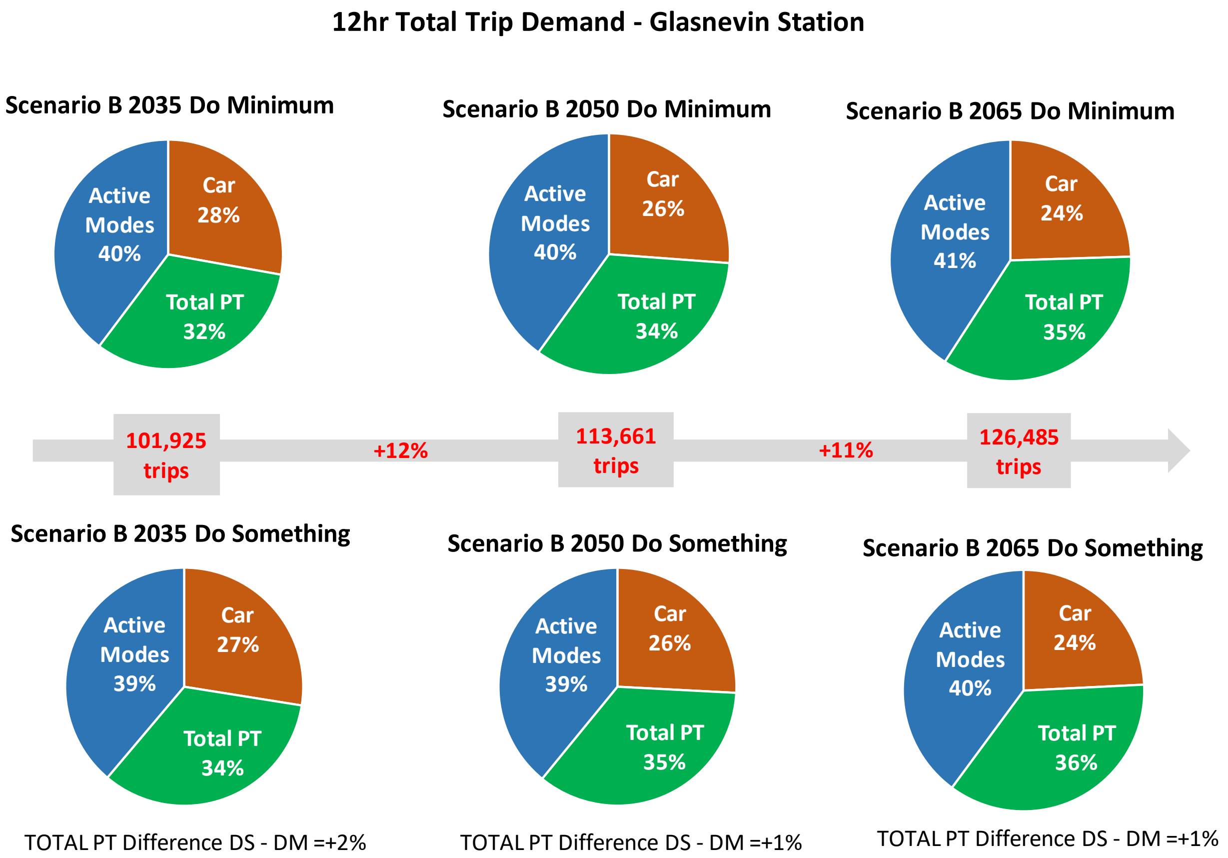


Figure 6.2: Mode Share of Trips from Zones around Glasnevin Station – Scenario B

Figure 6.3 presents the changes in public transport mode share between the Do Minimum and Do Something scenarios in Scenario A 2065 AM Peak Hour, while Figure 6.4 presents the same for Scenario B 2065 AM Peak Hour.

In the AM peak hour of 2035, 2050, and 2065, for both Scenario A and Scenario B, most zones around Glasnevin Station see estimated increase in PT mode share (including the Project) of 1-5 percentage points. In 2050 and 2065, for Scenario A, the zones immediately west and northwest of the station, including most Glasnevin, will see an estimated increase in PT mode share (including the Project) of 5-10 percentage points.

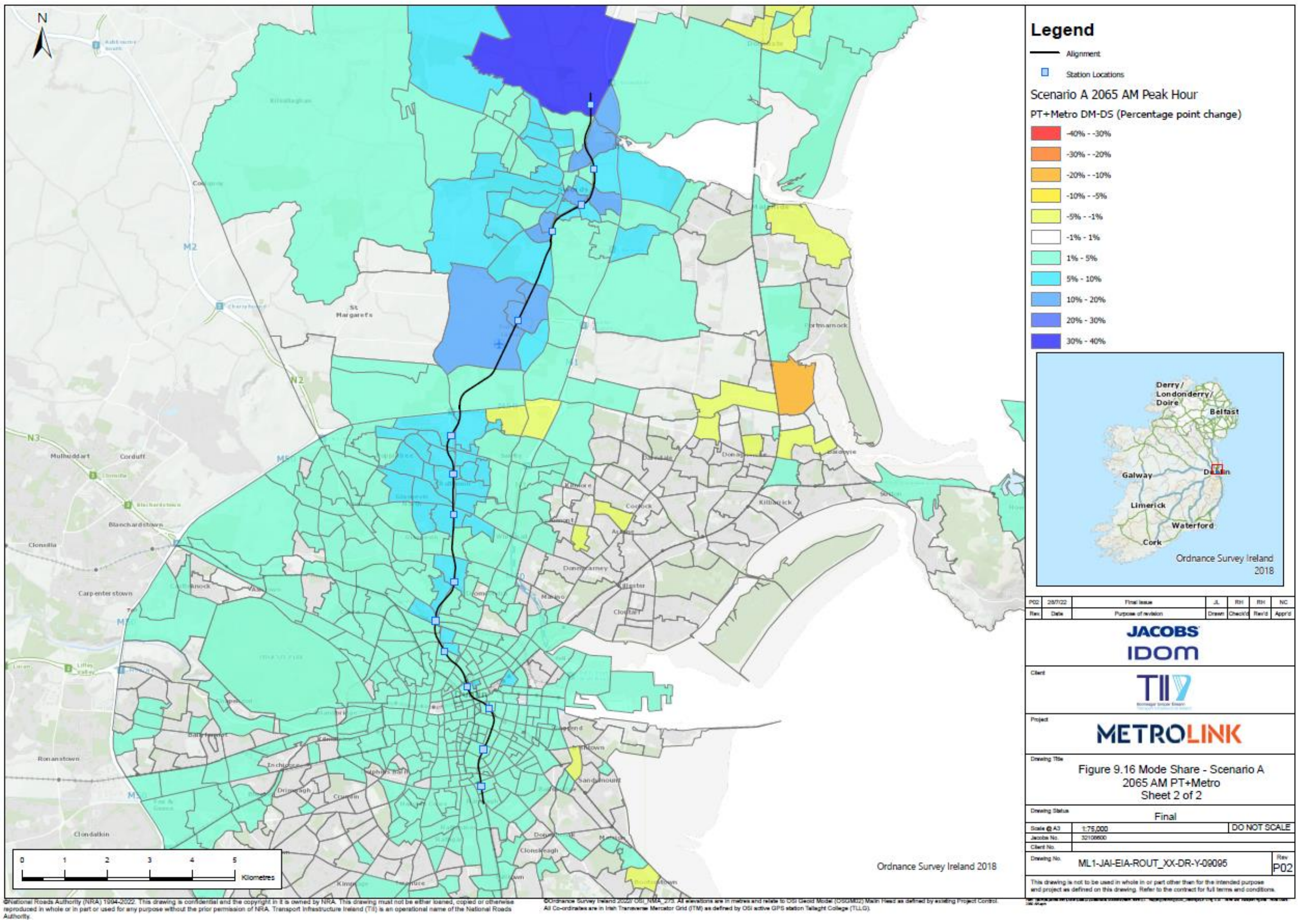


Figure 6.3: Changes in Public Transport Mode Share (including the Project) in Scenario A 2065 AM Peak Hour

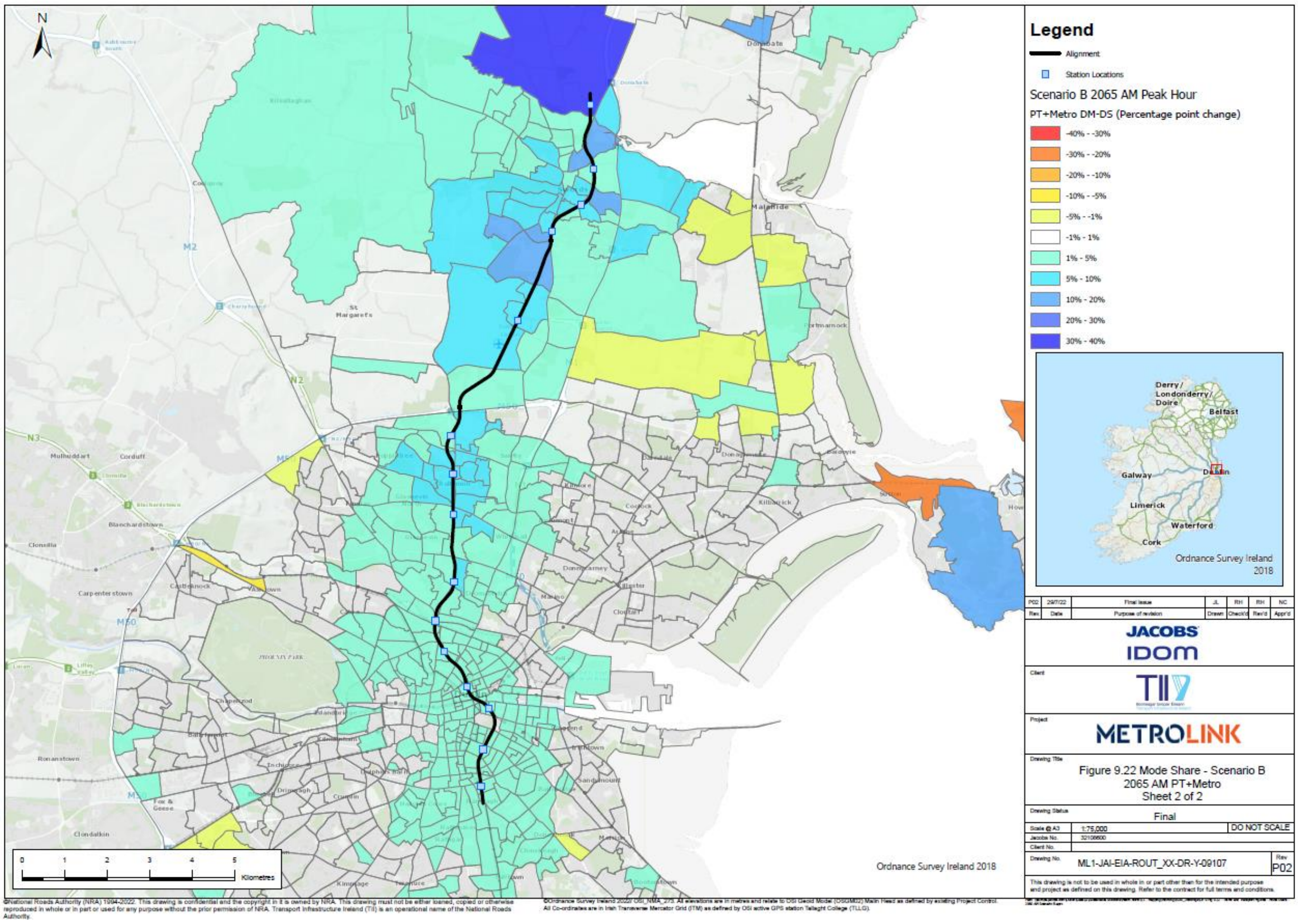


Figure 6.4: Changes in Public Transport Mode Share (including the Project) in Scenario B 2065 AM Peak Hour

In Scenario A the following changes to journey times are observed:

- The most significant journey time savings from the Glasnevin area would be to the Swords Pavilion area, of approximately 40 minutes in the 2035, 2050, and 2065 AM period. This is a reduction of over 50% compared to the Do Minimum scenario.
- Public transport journeys from the Glasnevin area to other areas in north Dublin, such as Swords East, will see savings of approximately 23 minutes in the 2035 AM period and rising to 27 minutes in the 2065 AM period; and to Dublin Airport, savings of approximately 24 minutes in the 2035, 2050, and 2065 AM period, which is a reduction of approximately 50% compared to the Do Minimum scenario.
- Public transport journeys from the Glasnevin area to key Dublin City Centre locations such as O'Connell Street area and St. Stephen's Green area will see savings of between 4 and 10 minutes in the 2035, 2050, and 2065 AM period when the proposed Project is in place.
- Public transport journeys from the Glasnevin area to areas in south Dublin, such as Sandyford, will see savings of approximately 18 minutes in the 2035, 2050, and 2065 AM period.

In Scenario B the following changes to journey times are observed:

- The most significant journey time savings from the Glasnevin area would be to the Swords Pavilion area, of approximately 26 minutes in the 2035 AM period, and rising to 31 minutes in the 2065 AM period. This is a reduction of approximately 50% compared to the Do Minimum scenario.

- Public transport journeys from the Glasnevin area to Dublin Airport will see savings of approximately 27 minutes in the 2035 AM period, and approximately 23 minutes in the 2050 and 2065 AM period. This is a reduction of approximately 50% compared to the Do Minimum scenario.
- Public transport journeys from the Glasnevin area to key Dublin City Centre locations such as O'Connell Street area and St. Stephen's Green area will see savings of between 1 and 6 minutes in the 2035, 2050, and 2065 AM period when the proposed Project is in place.
- Public transport journeys from the Glasnevin area to areas in south Dublin, such as Sandyford and Rathgar Road area, will see savings of between 11 and 16 minutes in the 2035, 2050, and 2065 AM period.

6.1.2 Traffic Impact Assessment

Figure 6.5 presents the changes in road mode share per zone in Scenario A 2065 AM peak hour, with Figure 6.6 presenting the same for Scenario B 2065.

In the 2035 AM period, the zones along the heavy rail line see a reduction of private car mode share by 1-5 percentage points as a result of the potential to interchange, however much of the surrounding zones see negligible changes. In the 2050 and 2065 AM periods, the zones that also see these reductions in private car mode share of 1-5 percentage points extend further beyond the alignment, such as along the heavy rail line and towards the M50 to the west of Glasnevin station.

Over the 12hr period, the zones within a 2km radius of Glasnevin Station see a reduction of over 200 car trips between the Scenario A 2035 Do Minimum and Do Something scenarios, reaching a reduction of over 490 trips in Scenario A 2050. In 2065, there is a reduction of 690 car trips between the Do Minimum and Do Something scenarios. In Scenario B, these zones see a reduction of over 150 car trips between the 2035 Do Minimum and Do Something scenarios, increasing to a reduction of 200 car trips in 2050. 2065 sees a reduction of 190 car trips between the Do Minimum and Do Something scenarios.

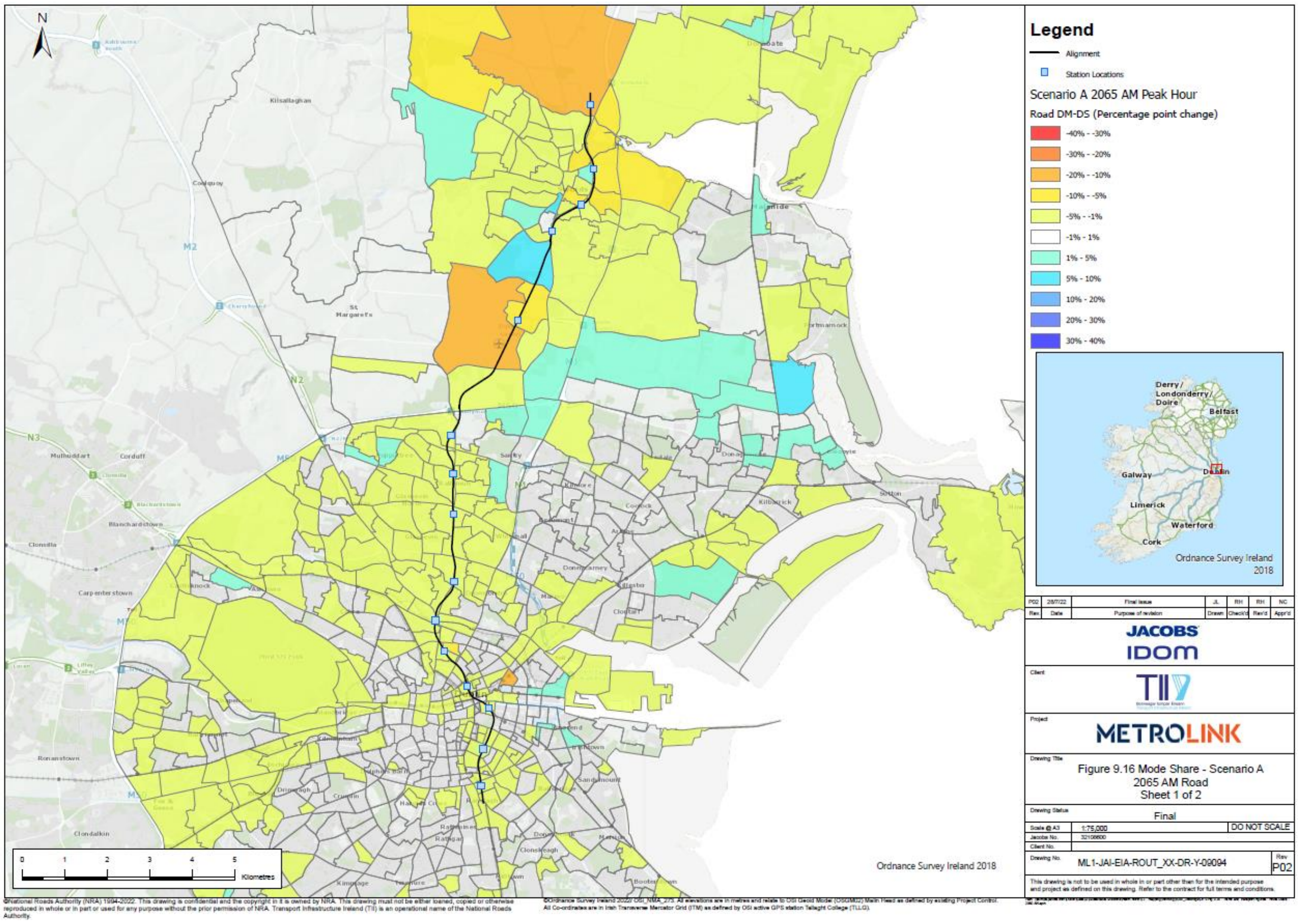


Figure 6.5: Changes in Car Mode Share in Scenario A 2065 AM Peak Hour

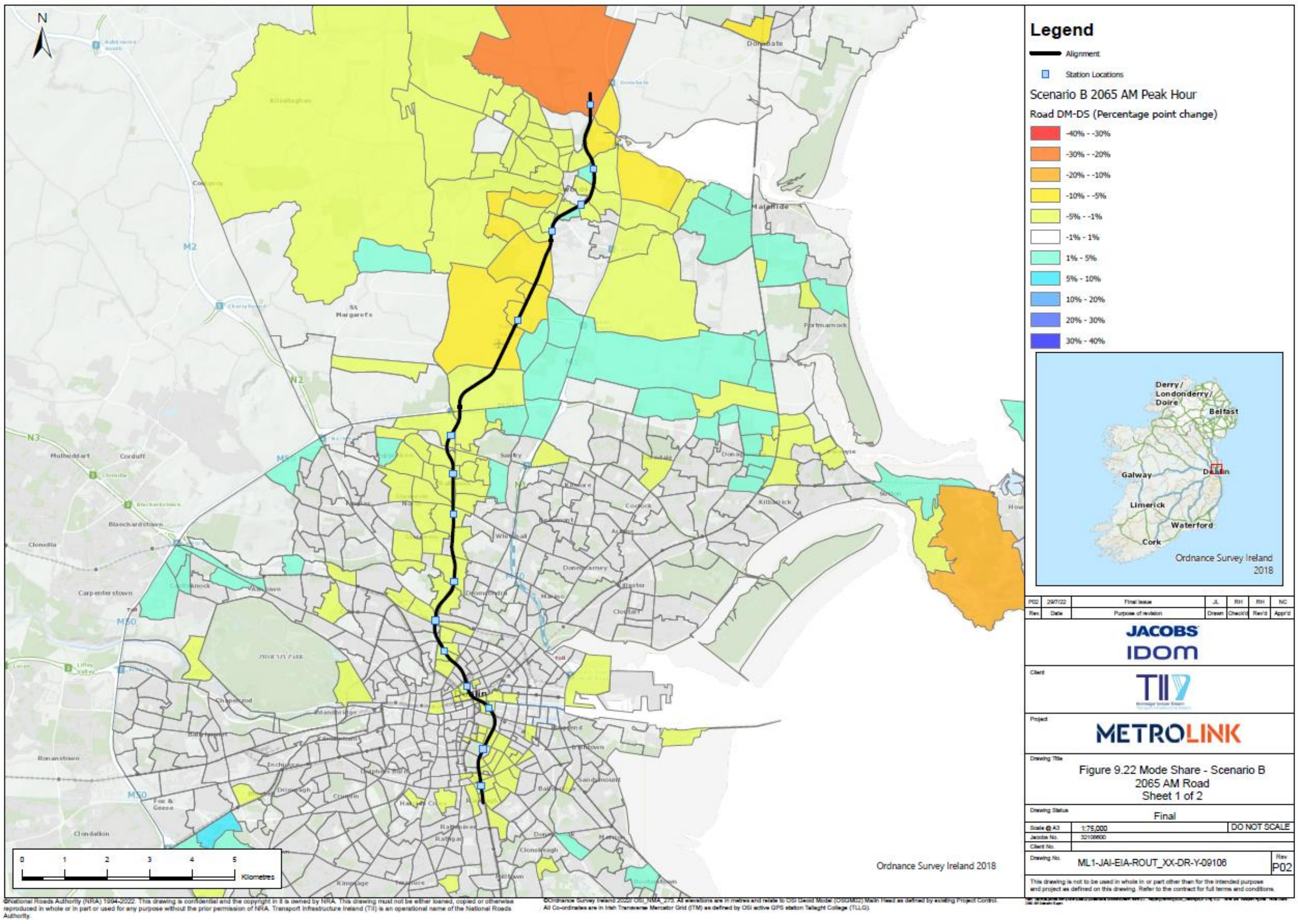


Figure 6.6: Changes in Car Mode Share in Scenario B 2065 AM Peak Hour

6.1.3 Pedestrian Impact Assessment

An assessment of the pedestrian provision around the station has been undertaken, in order to confirm its robustness in catering for the additional demand associated with the proposed Project. The Scenario A 2050 design year was assessed, with Scenario A 2065 also assessed as the 'worst-case scenario' for passenger numbers, as this scenario has the highest volume of total AM passenger demand in the future year between both Scenario A and Scenario B (almost 61,000 AM boarding passengers across the alignment in Scenario A, compared to almost 55,000 AM boarding passengers in Scenario B). At all stations, the passenger demand in the AM peak hour is lower in Scenario B than in Scenario A, with the exception of Fosterstown Station where there is a 12% increase in Scenario B. As such, Scenario B has not been assessed, with the exception of Fosterstown Station to ensure that all possible significant impacts are accounted for.

Figure 6.7 below illustrates the predicted Project's passengers (Scenario A 2050 AM Peak) with the forecast population. It shows the movements to and from the station and the number of people boarding and alighting at Glasnevin Station is highlighted. The assessment indicates that all links comply with DCC guidance and are deemed 'Comfortable' in both scenarios. This is no change from the baseline conditions, presenting an imperceptible impact to pedestrians when the proposed Project is in place.

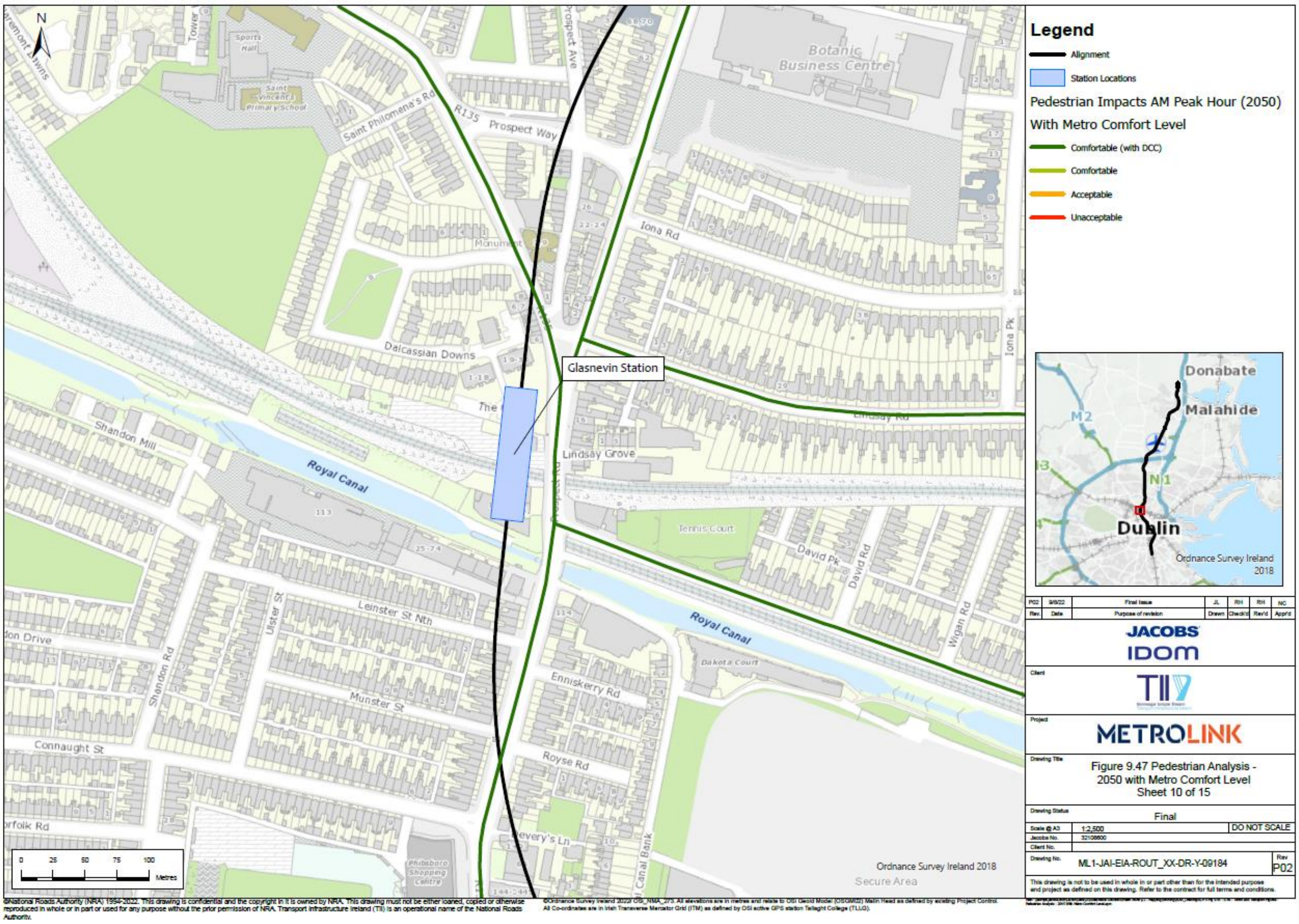


Figure 6.7: Pedestrian Comfort Assessment with the Project (Scenario A 2050 AM Peak Hour)

The Scenario A 2065 results show that all links remain within DCC guidance with the exception of Finglas Road, however this is still deemed ‘Comfortable’ according to TfL’s Pedestrian Comfort Calculator.

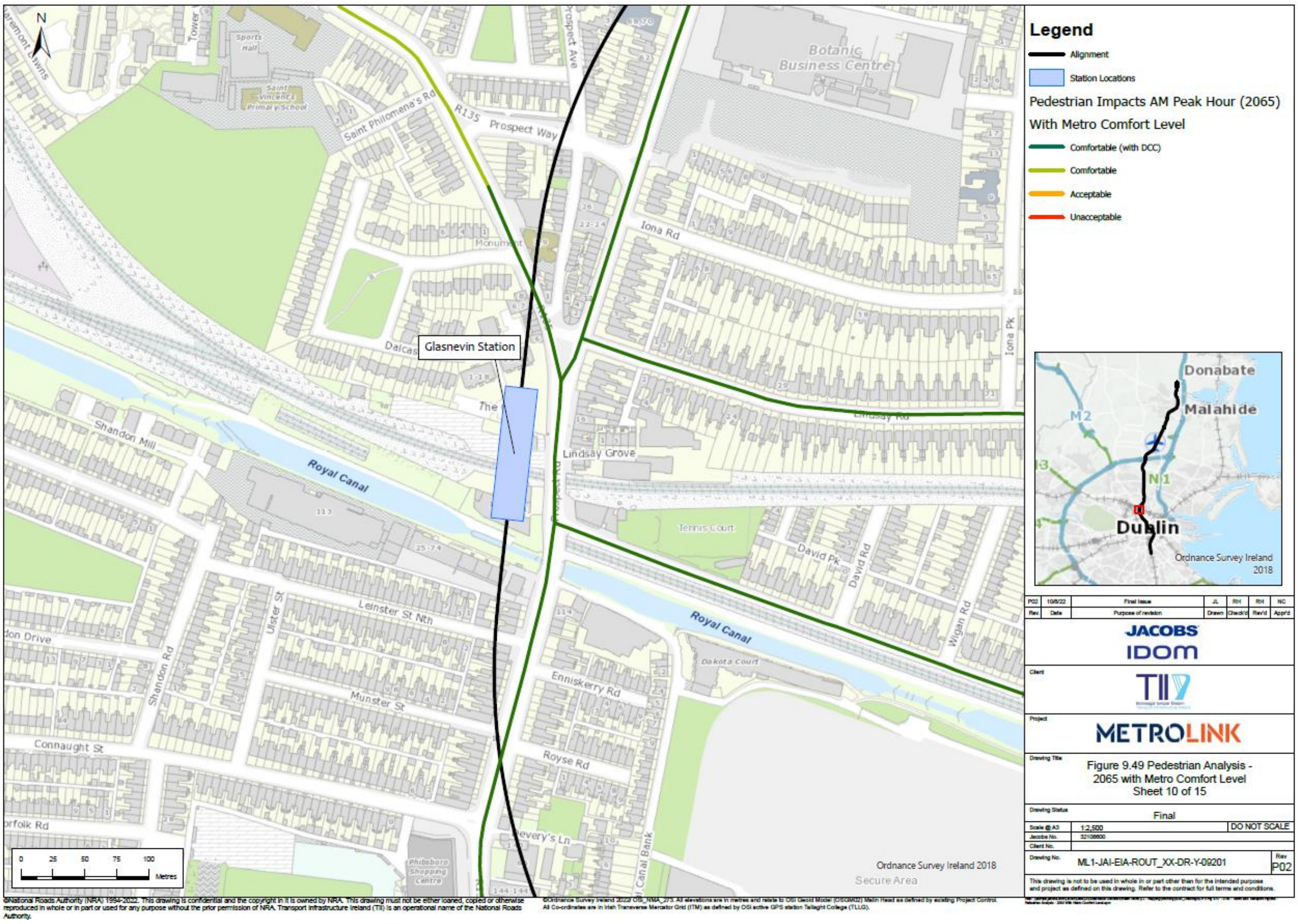


Figure 6.8: Pedestrian Comfort Assessment – With the Project (Scenario A 2065 AM Peak Hour)

6.1.3.1 MicroSimulation Assessment

In recognition of the potentially complex routing and road crossing behaviour at this site, a VisWalk model was produced for the area surrounding the station, the extent of this model is illustrated in Figure 6.9. The modelled layout includes the main roads and streets of Whitworth Road, Cross Gunn’s Bridge and Phibsborough Road. The model has been prepared for AM and PM weekday peak hours, for the future years of 2035 and 2050.

As well as the layout of the proposed Glasnevin train station and the proposed Glasnevin Project station, the model also includes the walkways in the vicinity of the train station and Project station, as well as a proposed public plaza and bus layover. The Glasnevin MicroSim Report further details the modelled process, model demands and model development.

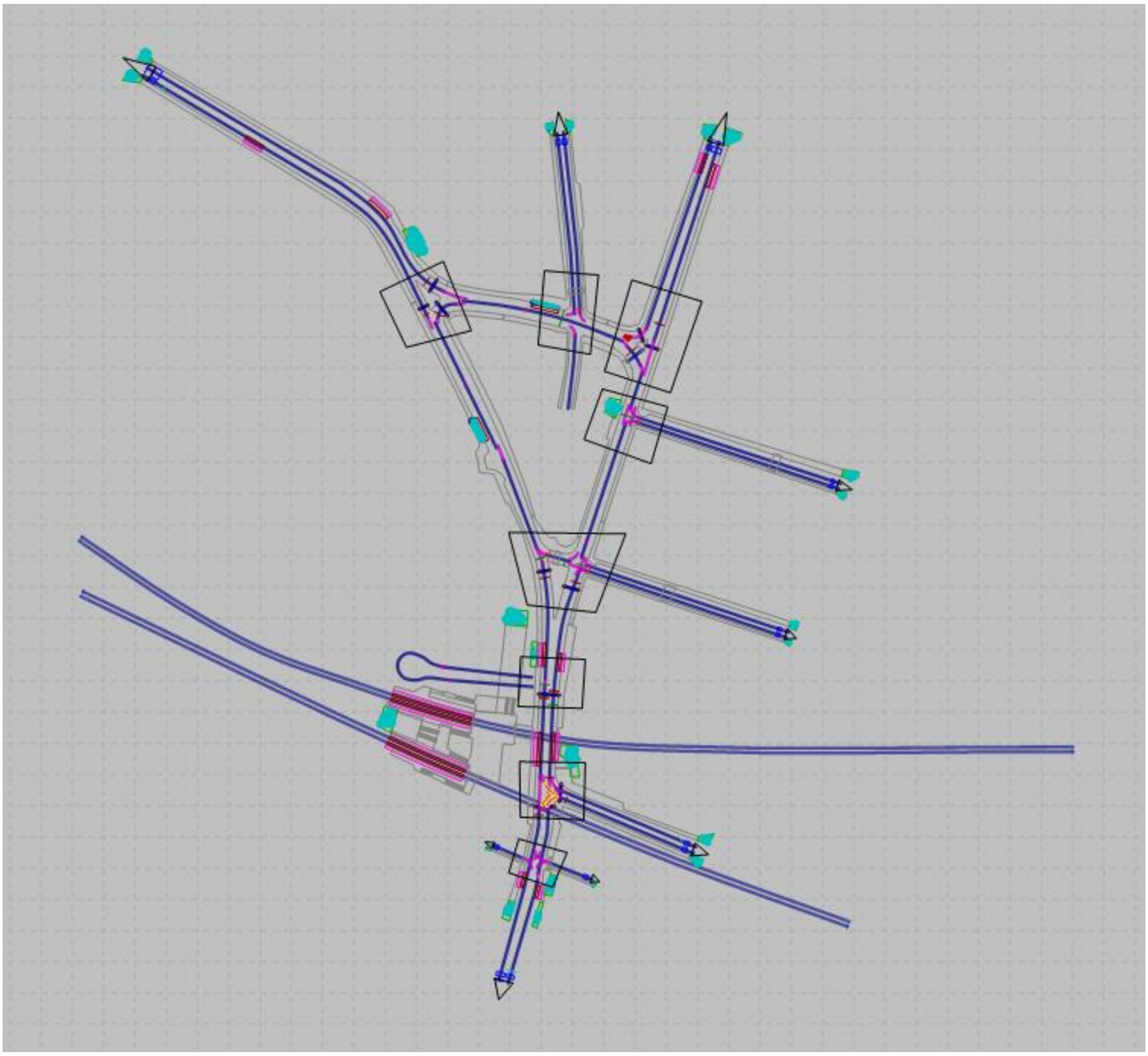


Figure 6.9: Extent of Glasnevin MicroSimulation Model

Figure 6.10 illustrates the microsimulation model with pedestrians assigned to the network, including the Bus Connects Core Bus Corridor proposals.

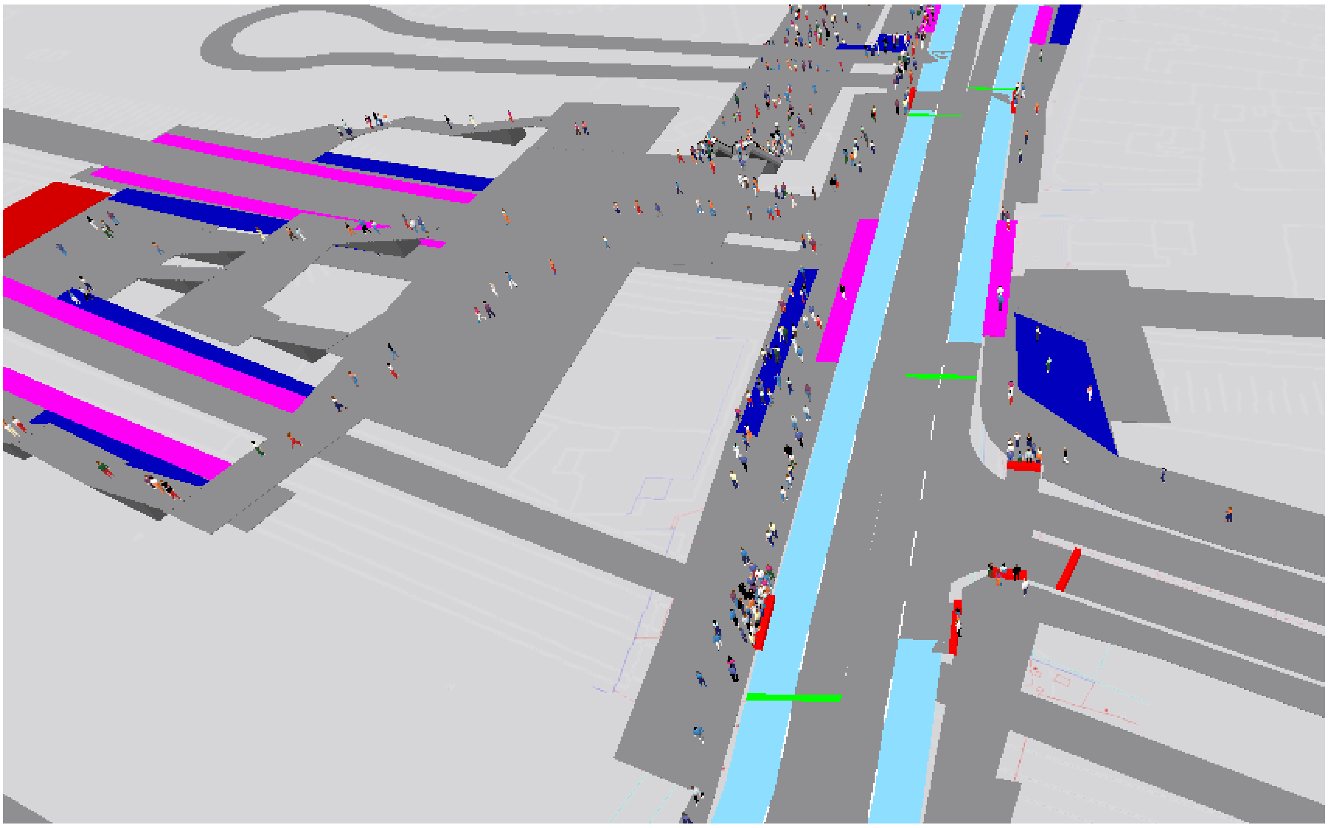


Figure 6.10: Microsimulation model in operation during the AM scenario (looking north on R108)

Figure 6.10 indicates some of the key desire lines for pedestrians within the model network. The figure shows the relatively high level of demand at the pedestrian crossings at the Whitworth Road junction. In particular, there is a high level of pedestrian demand to cross the R108 in the eastbound direction during the PM period.

During initial runs of the model, the model experienced saturation on the pedestrian crossing at the southern side of the R108/Whitworth Road junction. Within the model, this crossing has been widened from 2m to 4m in width. Whilst this has not been incorporated into the design at present, it has been confirmed that there is space to accommodate this change in width.This change has been sufficient to stop the model from locking up and it provides adequate capacity to accommodate forecast pedestrian demand in the 2035 and 2050 scenarios. These design changes are being put forward to be implemented in the Opening Year.

The model indicates that there is sufficient capacity for the transfer of passengers between the Project and DART services. Passengers are able to transfer between the platforms for these services without experiencing congestion or poor levels of service.

In order to assess the performance of the pedestrian network with the Project station in place, Level of Service (LOS) indicators have been retrieved from the model. The LOS scale used in the assessment is shown in Figure 6.11. All LOS plots presented within this report are based on the widening of the pedestrian crossing on the southern arm of the R108/Whitworth Road junction to 4m.

Fruin's Level of Service	Average area module		
	Walkway [m²/ped]	Stairs [m²/ped]	Queue [m²/ped]
A	>3.24	>1.85	>1.21
B	3.24-2.32	1.85–1.39	1.21-0.93
C	2.32-1.39	1.39-0.93	0.93-0.65
D	1.39-0.93	0.93-0.65	0.65-0.28
E	0.93-0.46	0.65-0.37	0.28-0.19
F	<0.46	<0.37	<0.19

Figure 6.11:Fruin's Level of Service key representing A as least congested and F as heavily congested

The LOS for the 2050 AM model scenario is shown in Figure 6.12.

Figure 6.12 indicates that in general the network within the DART / Glasnevin station building experiences an LOS of B or better. The exception to this is the foot of the escalators in at the Project station, where waiting pedestrians mean that the LOS is lower.

The LOS on the network external to the station is also generally at criteria B or better. However, the LOS is inevitably lower at the ends of pedestrian crossings as people are required to wait for the relevant green phase in order to cross. This delay to pedestrians is concentrated at the entrances to the crossings and does not impede the operation of the wider network.

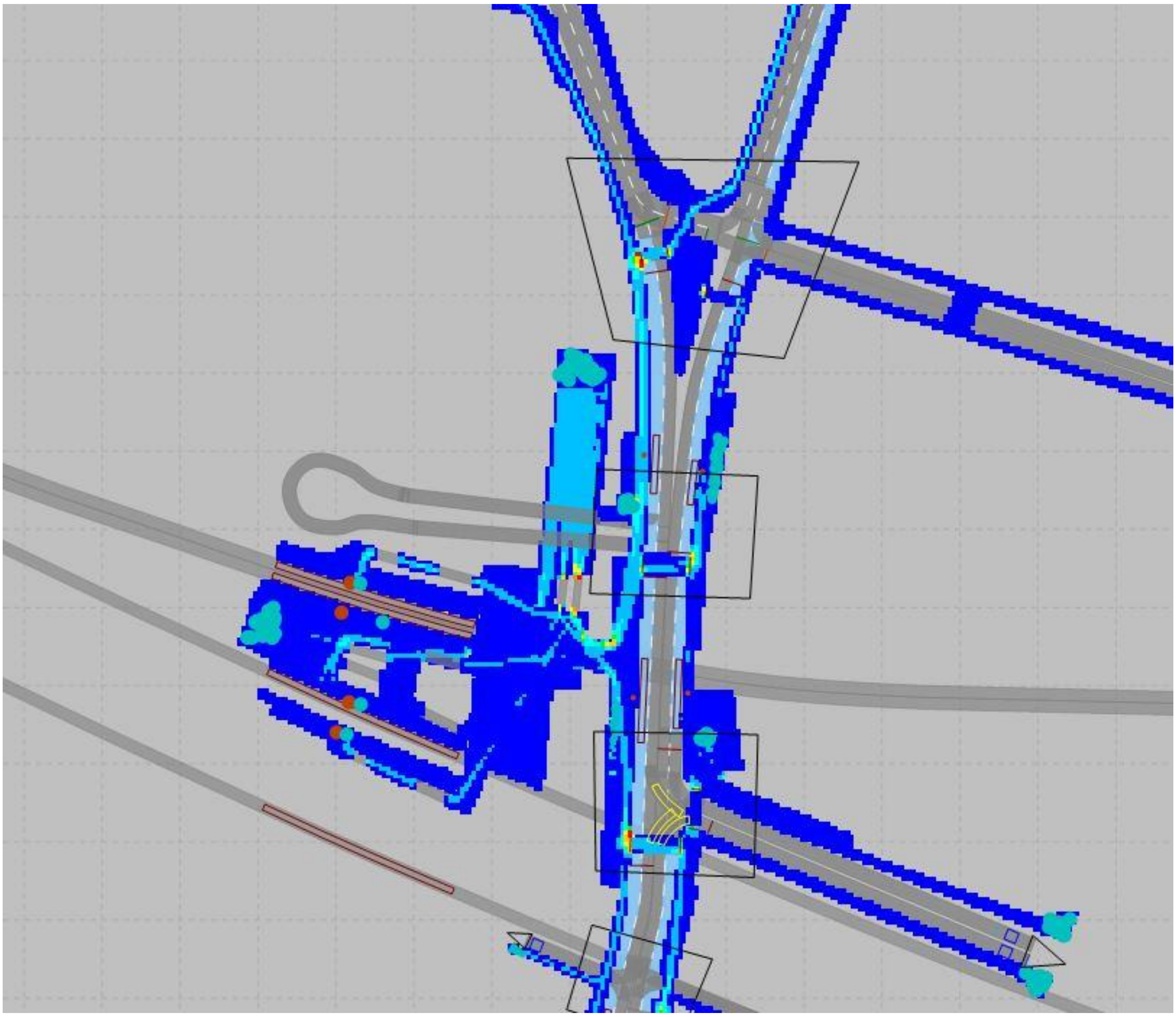


Figure 6.12: Level of Service heat map for Glasnevin during 2050 AM peak

The LOS for the 2050 PM model scenario is shown in Figure 6.13. The PM displays a similar pattern of LOS to the AM, however, there is less congestion at the waiting areas for pedestrian crossings in this time period.

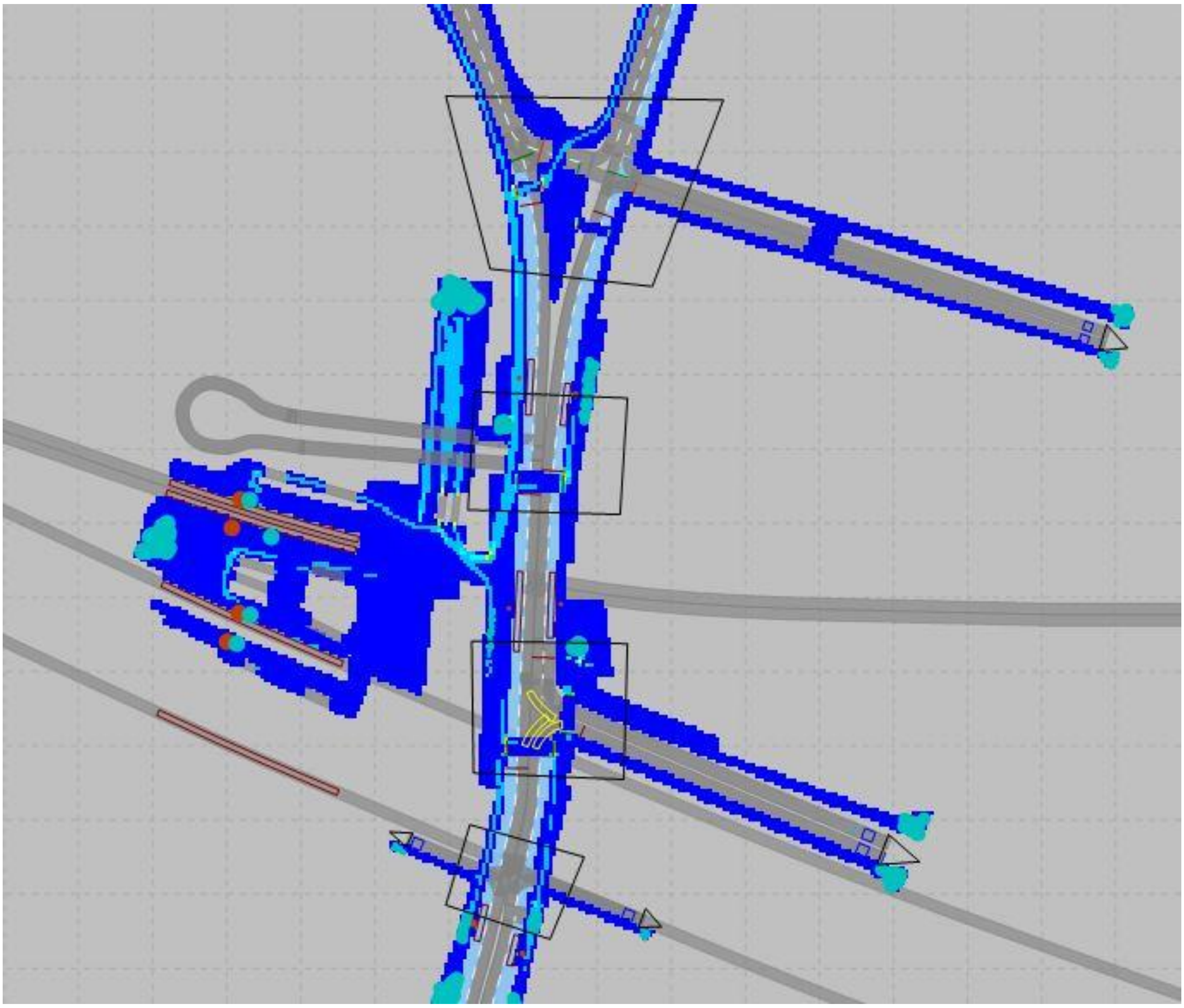


Figure 6.13: Level of Service heat map for Glasnevin during 2050 PM peak

In summary, the microsimulation model for Glasnevin for the AM peak hour illustrates the high demand for the interchange from DART to the Project, as well as from Phibsborough and surrounding roads. Due to the direct link between the Irish Rail Station and the Project, a good LOS was observed within the station.

Analysis of the model indicates that the network operates with an acceptable LOS in both the AM and PM peak periods. It was found that no congestion occurred for pedestrians transferring through the overall station footprint due to the dedicated passenger link that is proposed.

6.1.4 Cycling Impact Assessment

The future street level layout at Glasnevin provides for a two-way cycle lane along the northern boundary of the station box to facilitate access to the cycle parking facilities. A segregated two-way cycle lane is also provided along the southbound side of Prospect Road, with a cycle crossing present to provide safe access to the station. These improvements to the cycle infrastructure along Prospect Road will result in the Quality of Service improving from Level B in the Baseline scenario to Level A in the Operational Phase.

A methodology has been applied to determine the potential demand for cycle parking at each of the stations. This methodology utilises the number of boarding and alighting passengers, the distance of origin/destinations from the station, and the location of the station. The passenger demand from an earlier Opening Year has been utilised to determine the potential cycle demand in the Opening Year, and in the Opening Year +5 Years.

This approach has informed the design and the number of cycle parking spaces provided at each station. Other factors such as the availability of land, potential future land uses and parking supply and the location of the station have also been taken into consideration by the design team in determining the quantum of cycle parking spaces provided.

For the Glasnevin Station, a total of 120 cycle spaces. Cycle lanes are being provided along Mobhi Road to access the station and to tie in with BusConnects cycle lane proposals.

6.1.5 Road Safety

A Stage 1 Road Safety Audit has been undertaken for all of the proposed highway works for the Project. This is under a separate cover.

7. Summary

In Scenario A, Glasnevin Station will facilitate approximately 12,400 passenger movements over the 12hr peak period (07:00-19:00) in 2035, rising to over 16,100 in 2050 and over 21,200 in 2065. In Scenario B, Glasnevin Station will facilitate approximately 19,200 passenger movements over the 12hr peak period (07:00-19:00) in 2035, rising to over 14,600 in 2050 and 17,500 in 2065.

The main catchment origins and destinations of the people boarding and alighting at the Glasnevin Station will be:

- Origins from Drumcondra in the east;
- Origins from Cabra in the west;
- Destinations at St. Vincent's School; and,
- Destinations at Phibsborough Shopping Centre.

The proposed Project will result in increases public transport mode share of up to 10 percentage points in zones to the east of the station and increases of up to 20 percentage points in zones to the west. There will be a reduction in road mode share of 10 percentage points in zones to the east of the station, and a reduction of between 5 and 10 percentage points in zones to the west, resulting in reduction of approximately 690 car trips from the zones surrounding Glasnevin Station over the 12hr period between the Do Minimum and Do Something scenarios. In Scenario B 2065, there is a reduction of approximately 190 car trips between the Do Minimum and Do Something Scenarios over the 12hr period.

The proposed Project will result in increases in public transport mode share of 1-5 percentage points for most zones around Glasnevin Station, in both Scenario A and Scenario B. By 2050 and 2065, in Scenario A, this increase goes up to 5-10 percentage points for the zones immediately west and northwest of the station, which covers most of Glasnevin. Conversely, there will be a reduction in road mode share of 1-5 percentage points for most zones surrounding Glasnevin Station, in both scenarios.

The proposed Project will result in improvements to the public transport journey times for people in the area. AM period public transport journeys from Glasnevin area to Swords Pavilion area are expected to see time savings of approximately 40 minutes in both Scenario A and Scenario B, by 2065. AM period public transport journeys from Glasnevin area to Dublin Airport area are expected to see time savings of approximately 24 minutes in Scenario A, and 23 minutes in Scenario B, by 2065. These are time savings of approximately 50% compared to the Do Minimum.

The station will also provide for 120 cycle parking spaces, and the pedestrian network will remain 'Comfortable' when the proposed Project is in place. The MicroSim models show that in the AM Peak, the DART / Glasnevin station building experiences an LOS B or better. The exception to this is the foot of the escalators in the Project section of the station, where waiting pedestrians mean that the LOS is lower.

The LOS on the network external to the station is also generally at criteria B or better. However, the LOS is inevitably lower at the ends of pedestrian crossings as people are required to wait for the relevant green phase in order to cross. This delay to pedestrians is concentrated at the entrances to the crossings and does not impede the operation of the wider network. This is due to the high interchange between the DART and the Project.

Overall, the Glasnevin Station will provide for improvements to the public transport network resulting in decreased private car usage/trips and increased public transport usages, and will facilitate walking and cycling to the station, without significantly impacting on the operation of the road network in the area.

Appendix A. Traffic Flow Diagrams

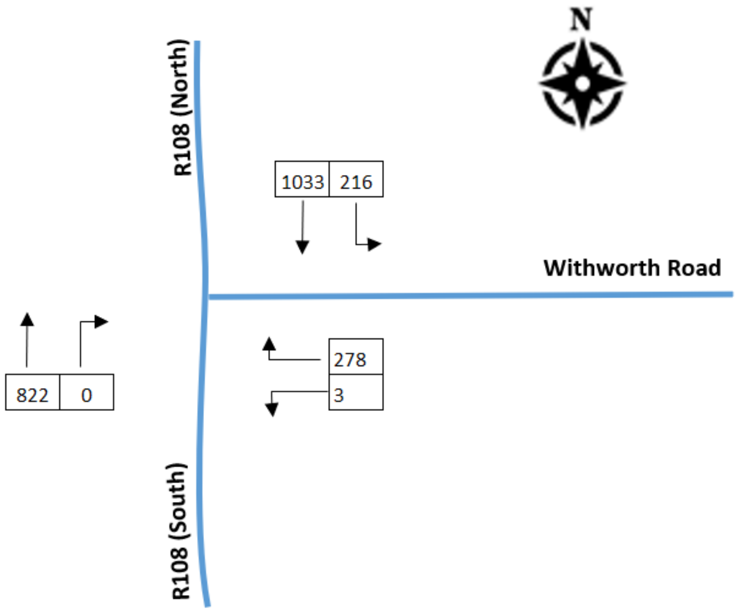


Figure 7.1: 2018 Base AM Peak Hour Traffic – Prospect Road (R108) / Whitworth Road Junction

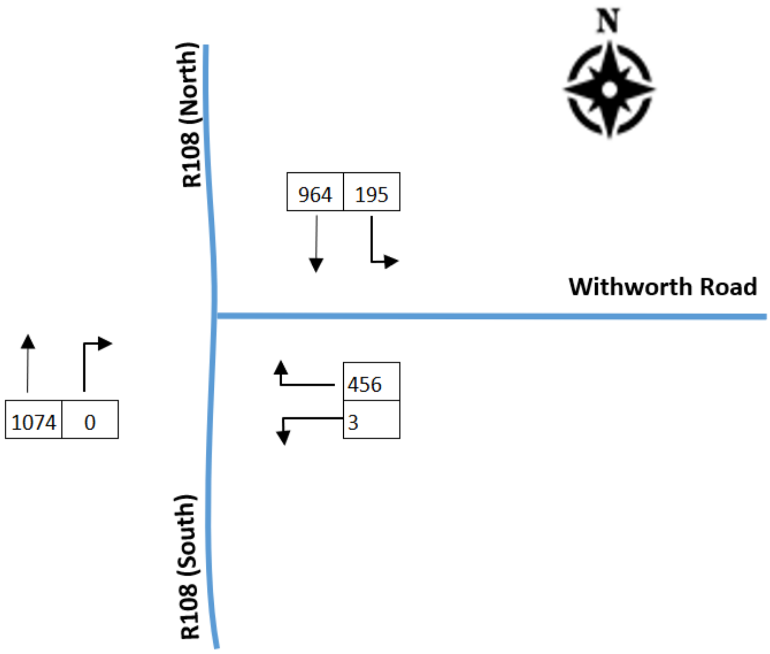


Figure 7.2: 2018 Base PM Peak Hour Traffic – Prospect Road (R108) / Whitworth Road Junction

Contents

1. Introduction

1.1 Background

Jacobs/IDOM has been commissioned to undertake the Environmental Impact Assessment Report (EIAR) in support of the proposed Dublin MetroLink project (hereafter referred to as the proposed Project). The EIAR is being prepared to assess the environmental impacts of the proposed Project, including in relation to traffic and transport.

This Traffic and Transportation Assessment (TTA) assesses the operational impacts associated with the proposed Mater Station on the traffic and transport network in the local area. TTA's have been prepared for each individual station as well as an overall TTA for the proposed Project.

Jacobs/IDOM has also been commissioned to undertake a scheme traffic management plan (STMP). The STMP is a standalone report within the EIAR. The STMP assesses the impact of the construction of the Project on all road users and proposes mitigation measures where appropriate.

A summary of the TTAs and STMP will be included within the Traffic and Transportation chapter of the EIAR.

1.2 Assessment Scenarios

In order to provide a rounded assessment of the proposed Project, its impacts have been reviewed for a range of future years, and in the context of two alternative future scenarios. The forecast years are 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). As outlined in Table 1.1, Scenario A includes the proposed Project and committed transport schemes only, while Scenario B includes a range of further planned schemes depending on the forecast year.

Table 1.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project.
Do Minimum Scenario	Committed transport schemes in the absence of the Project.
Do Something - Scenario A	Scenario with the Project and committed transport schemes only.
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for Opening year (2035) and planned schemes under the Transport Strategy for the GDA for the Design Year (2050) and the Forecast Year (2065).

Committed transport schemes in the Do Minimum scenario and in Scenario A, that have been progressed through planning and are either under construction or are programmed into the capital expenditure budget, include, but are not limited to:

- Luas Green Line Capacity Enhancement – Phase 1;
- BusConnects Dublin Area Bus Network Redesign; and

- BusConnects Fares and Ticketing.

Scenario B represents the likely future receiving environment and is based on the delivery of the schemes identified within the National Development Plan for 2035, and on the implementation of the NTA's Greater Dublin Area (GDA) Transport Strategy for 2050 and 2065. As such, this scenario considers the cumulative impacts of interactions between other projects that are most likely to impact on transport movements in the area. Schemes included in this scenario are, but are not limited to:

- Luas Green Line Capacity Enhancement - Phase 2;
- Luas Finglas;
- Luas Lucan;
- BusConnects Core Bus Corridors; and
- DART+.

More information on each modelled scenario is available in the Transport Modelling Plan (Appendix A9.3).

1.3 Project Overview

The proposed Project will be a high-capacity, high frequency rail line running from Swords to Charlemont, linking Dublin Airport, Irish Rail, the Dublin Area Rapid Transit (DART), Dublin Bus and Luas services, improving integration across public transport network in the Greater Dublin Area (GDA).

As well as linking major transport hubs, the proposed Project will connect key destinations including Swords, Ballymun, the Mater Hospital, the Rotunda, Dublin City University and Trinity College with much of the 19-kilometre route running underground.

When operations commence, there will be trains every 3 minutes during peak periods. This can rise to a service every 90 seconds, with the system capable of carrying a peak line flow of 20,000 passengers per hour in each direction.

1.3.1 Mater Station

Mater Station will be located under the Four Masters Park, with the R135 Berkley Road adjoining the west side of the park and Eccles Street lying on the east side of the park. Mater Hospital is located on the east side of Eccles Street and St Joseph's Church is located immediately south of the park. The surrounding area is largely residential. The location of the station is shown in Figure 1.1.

There will be one entrance to Mater Station, situated at the northwest corner of the park and close to the Hospital access, which is conveniently located to walk to Mater Hospital, St Joseph's Church and Berkeley Road. The station location will also connect with bus services to and from Dublin City Centre, with bus stops on Berkeley Road.

Mater Station location will result in the realignment of the existing kerb lines to facilitate the station tie in with the public realm. South of Sarsfield Street, the provision of a new pedestrian crossing results in the alteration to the kerb line at the existing bus stop.

Due to its proximity to the station entrance and associated pedestrian activity, the junction of Berkeley Road, Eccles Street and St Vincent's Road North has been proposed for signalisation, with provision for pedestrian crossings on every arm. The width of Eccles Street will be reduced at the junction. Provision of shared space will be incorporated on Eccles Street in the vicinity of the junction with Berkeley Road.

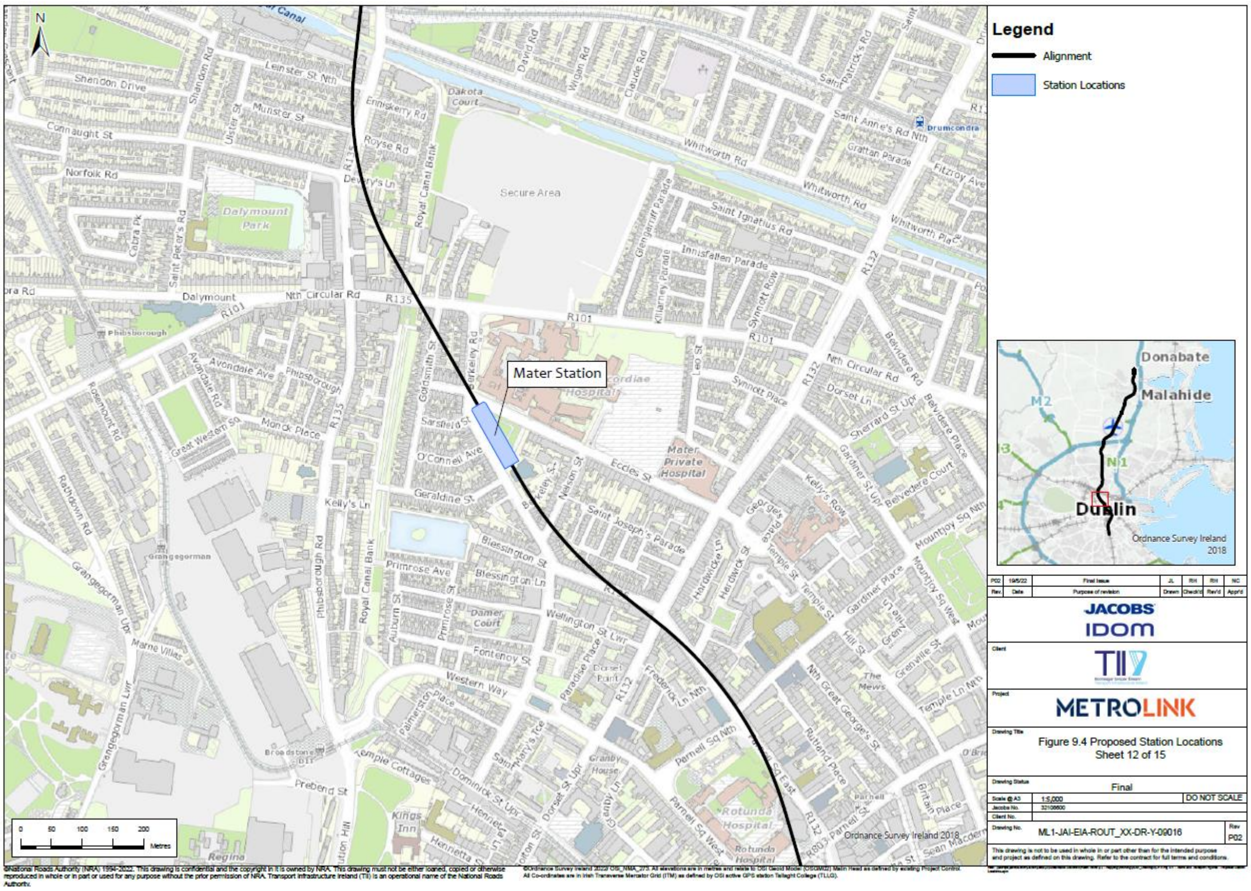


Figure 1.1: Proposed Station Location at Mater Station

2. Policy Context

Reference should be made to the Chapter 3 of the Overall Project TTA and Planning Policy Report (ML1-JAI-PLD-ROUT_XX-RP-Y-00020) for further detail on the overall project in relation to key national and regional policies.

The proposed Mater Station does not lie within any local area plan or masterplan lands.

The overarching theme of national planning policy is the consolidation and sustainable use of land in urban areas, particularly urban environments well served by public transport.

The National Spatial Strategy states that in order to promote sustainable development, it is essential to consolidate the physical growth of Dublin City. This should be supported by effective land use policies for the urban area which underpin increased investment in high quality public transport infrastructure. It outlines a number of requirements that are key to creating a compact and economically vibrant city including:

- The effective integration of land use and transportation policy: and
- Facilitating the movement of people and goods through an effective public transport system.

The Regional Planning Guidelines promote the consolidation of development within the metropolitan area, and the achievement of sustainable densities in tandem with a much-enhanced multi-modal transport system.

The Transport Strategy for the Greater Dublin Area 2016-2035 and the Regional Planning Guidelines are required under legislation to be consistent with each other, and therefore the purpose of the Strategy is "to contribute to the economic, social and cultural progress of the Greater Dublin Area by providing for the efficient, effective and sustainable movement of people and goods." The Strategy sets out the necessary transport provision for the period up to 2035, to achieve this objective for the region, including the provision of the Project.

2.1 Dublin City Council Development Plan (2016-2022)

The overarching theme of the local policy regarding movement is "helping to build an integrated transport network and encouraging the provision of greater choice of public transport and active travel."[1]

Based on review of the Dublin City Council Development Plan (2016 – 2022) it is the Policy of Dublin City Council (DCC):

SC19: To promote the development of a network of active, attractive and safe streets and public spaces which are memorable, and include, where appropriate, seating, and which encourage walking as the preferred means of movement between buildings and activities in the city. In the case of pedestrian movement within major developments, the creation of a public street is preferable to an enclosed arcade or other passageway.

SC20: To promote the development of high-quality streets and public spaces which are accessible and inclusive, and which deliver vibrant, attractive, accessible and safe places and meet the needs of the city's diverse communities.

MT2: Whilst having regard to the necessity for private car usage and the economic benefit to the city centre retail core as well as the city and national economy, to continue to promote modal shift from private car use towards increased use of more sustainable forms of transport such as walking, cycling and public transport, and to co-operate with the National Transport Authority (NTA), Transport Infrastructure Ireland (TII) and other transport

[1] Dublin City council - Dublin City Development Plan 2016–2022: Written Statement; Section 1.2 (e)

agencies in progressing an integrated set of transport objectives. Initiatives contained in the government's 'Smarter Travel' document and in the NTA's draft transport strategy are key elements of this approach.

MT3: To support and facilitate the development of an integrated public transport network with efficient interchange between transport modes, serving the existing and future needs of the city in association with relevant transport providers, agencies and stakeholders.

MT4: To promote and facilitate the provision of Metro, all heavy elements of the DART Expansion Programme including DART Underground (rail interconnector), the electrification of existing lines, the expansion of Luas, and improvements to the bus network in order to achieve strategic transport objectives.

MT5: To work with the relevant transport providers, agencies and stakeholders to facilitate the integration of active travel (walking, cycling etc.) with public transport, thereby making it easier for people to access and use the public transport system.

MT6: (i) To work with Iarnród Eireann, the NTA, Transport Infrastructure Ireland (TII) and other operators to progress a coordinated approach to improving the rail network, integrated with other public transport modes to ensure maximum public benefit and promoting sustainable transport and improved connectivity.

(ii) To facilitate the needs of freight transport in accordance with the National Transport Authority's Transport Strategy for the Greater Dublin Area 2016 – 2035.

MT7: To improve the city's environment for walking and cycling through the implementation of improvements to thoroughfares and junctions and also through the development of new and safe routes, including the provision of foot and cycle bridges. Routes within the network will be planned in conjunction with green infrastructure objectives and on foot of (inter alia) the NTA's Cycle Network Plan for the Greater Dublin Area, and the National Cycle Manual, having regard to policy GI5 and objective GIO18.

MT8: To work with, and actively promote, initiatives by relevant agencies and stakeholders such as An Taisce's 'Green Schools' initiative and the NTA's Smarter Travel Unit, to promote active travel in schools and communities, recognising the health and social benefits of walking and cycling as well as the environmental benefits.

MT9: To promote Bike and Ride at public transport hubs by providing secure, dry, bike parking facilities.

MT10: To provide 30kph speed limits and traffic calmed areas at appropriate locations throughout the city and subject to stakeholder consultation.

MT11: To continue to promote improved permeability for both cyclists and pedestrians in existing urban areas in line with the National Transport Authority's document 'Permeability – a best practice guide'. Also, to carry out a permeability and accessibility study of appropriate areas in the vicinity of all Luas, rail and BRT routes and stations, in co-operation with Transport Infrastructure Ireland and the National Transport Authority.

The Dublin City Development Plan and Dublin City Centre Transport Study outline strategic pedestrian routes within Dublin City Centre. These routes, which include Phibsborough Road and Dorset Street Lower, are envisaged to become streets where pedestrian movement and activity are prioritised

The Heavy Good Vehicles (HGV) Management Strategy created restrictions on the movement of HGV's with 5 or more axles within Dublin city centre. During the hours of 07.00 – 19.00, seven days a week, HGV's with 5 or more axles are not allowed to enter the restricted zone without having a permit. HGV's with 4 axles or less can enter the restricted zone at any time, but must follow specific designated routes, Northern Circular Road, Phibsborough Road, and Dorset Street Lower all form part of these designated routes.

The Dublin City Centre cycle parking strategy recommends the development of new and the expansion of existing on-street sites in order of ranking and targeting specific locations based on "real time" demand. It further recommends the expansion of sites with latent capacity as demand increases.

2.2 Draft Dublin City Council Development Plan (2022-2028)

Building on the objectives of the Dublin City Council Development Plan 2016-2022, the Draft Dublin City Council Development Plan 2022-2028 recognises the opportunities presented by MetroLink to achieve effective integration of land-use and transportation in the area.

SMT20: Key Sustainable Transport Projects:

- To support the expeditious delivery of key sustainable transport projects including MetroLink, BusConnects, DART+ and Luas Expansion Programme so as to provide an integrated public transport network with efficient interchange between transport modes, serving the existing and future needs of the city and region.

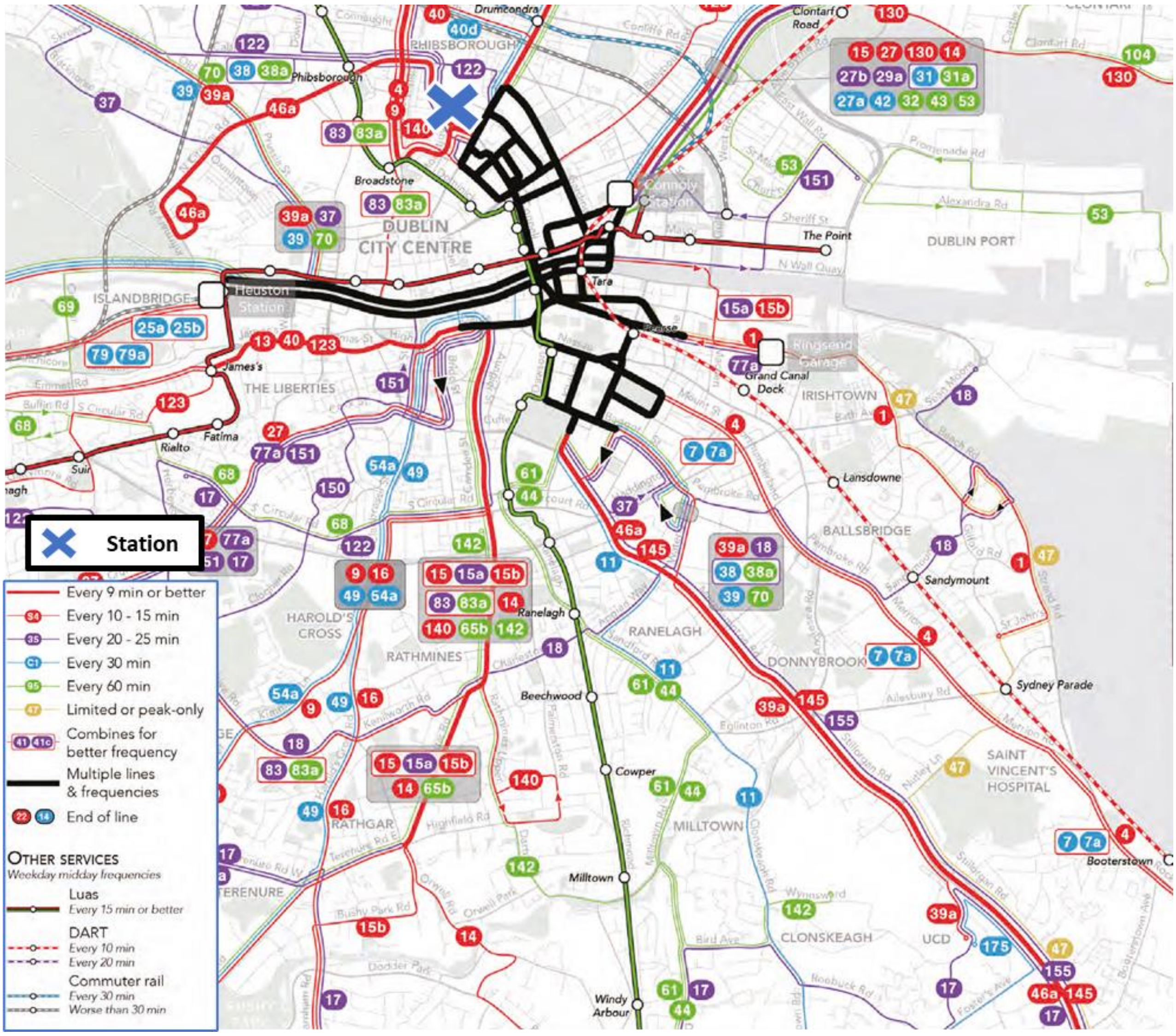
In addition, the Draft Plan highlights the role the proposed Project will play in delivering opportunities for developing the public ream around proposed stations.

3. Baseline Conditions

This section describes the existing receiving environment within the vicinity of the Mater Station and the wider environs, and identifies the future receiving environment for all modes of transport if conditions are planned to change in advance of the construction of the Project, such as the delivery of other proposed infrastructure projects.

3.1 Existing Public Transport Network

As shown in Figure 3.1, the area surrounding the Mater Station is served by several bus services with less than 15-minute frequencies, many of which have stops in close proximity to the station. Within a 600m buffer from the station there are 25 bus stops located along Berkeley Road, Eccles Street, Phibsborough Road and the N1 as shown in Figure 3.2. The nearest bus stop is on Berkeley Road, serving routes 38 (a, b and d) (from Burlington Road towards Damastown) 46a (from Phoenix Park towards Dun Laoghaire), 120 (from Parnell Street towards Ashtown Rail Station) and 179 (Sillan Tours).



(Base Source: www.busconnects.ie)

Figure 3.1: Existing bus network around Mater Station

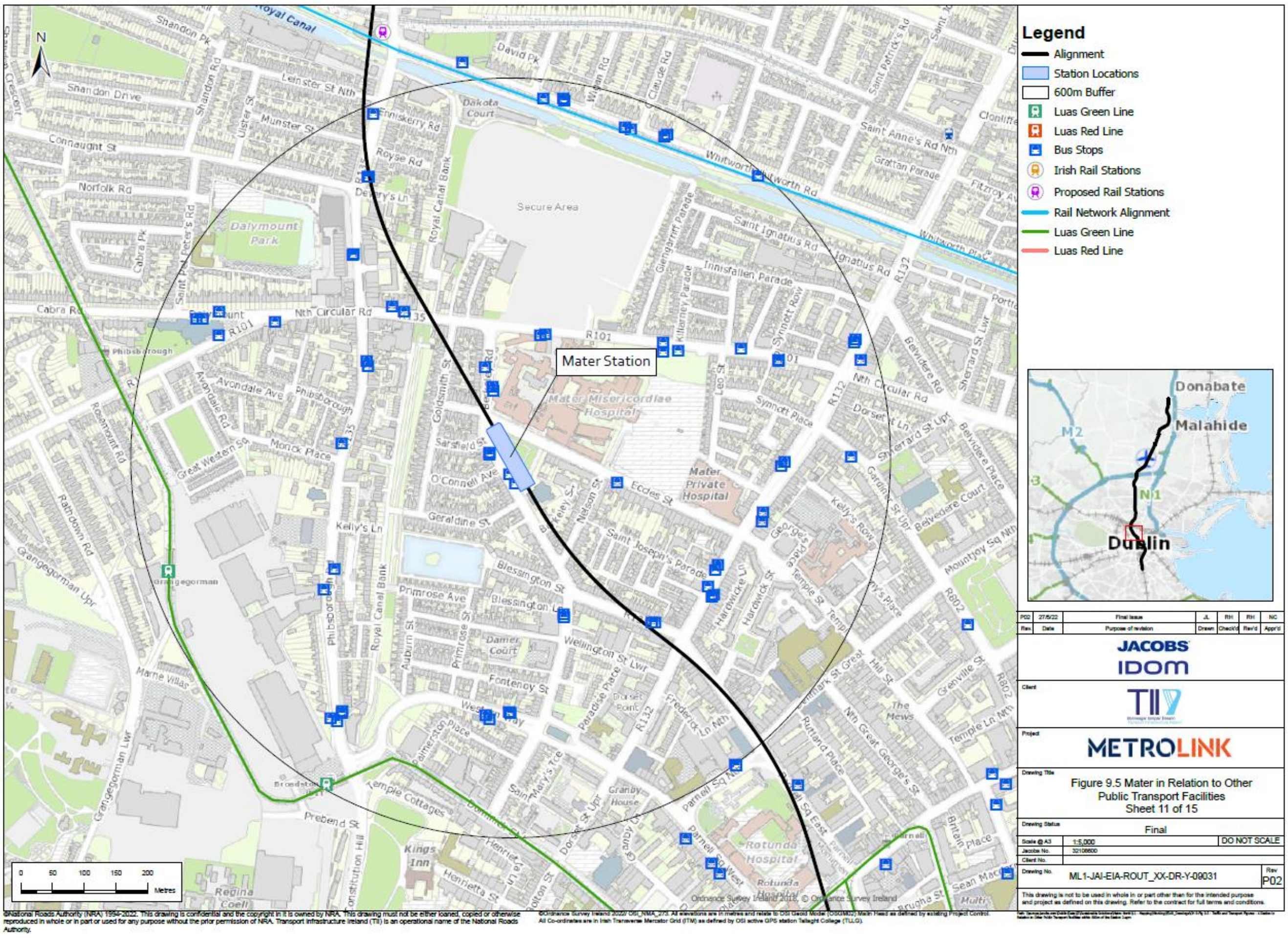
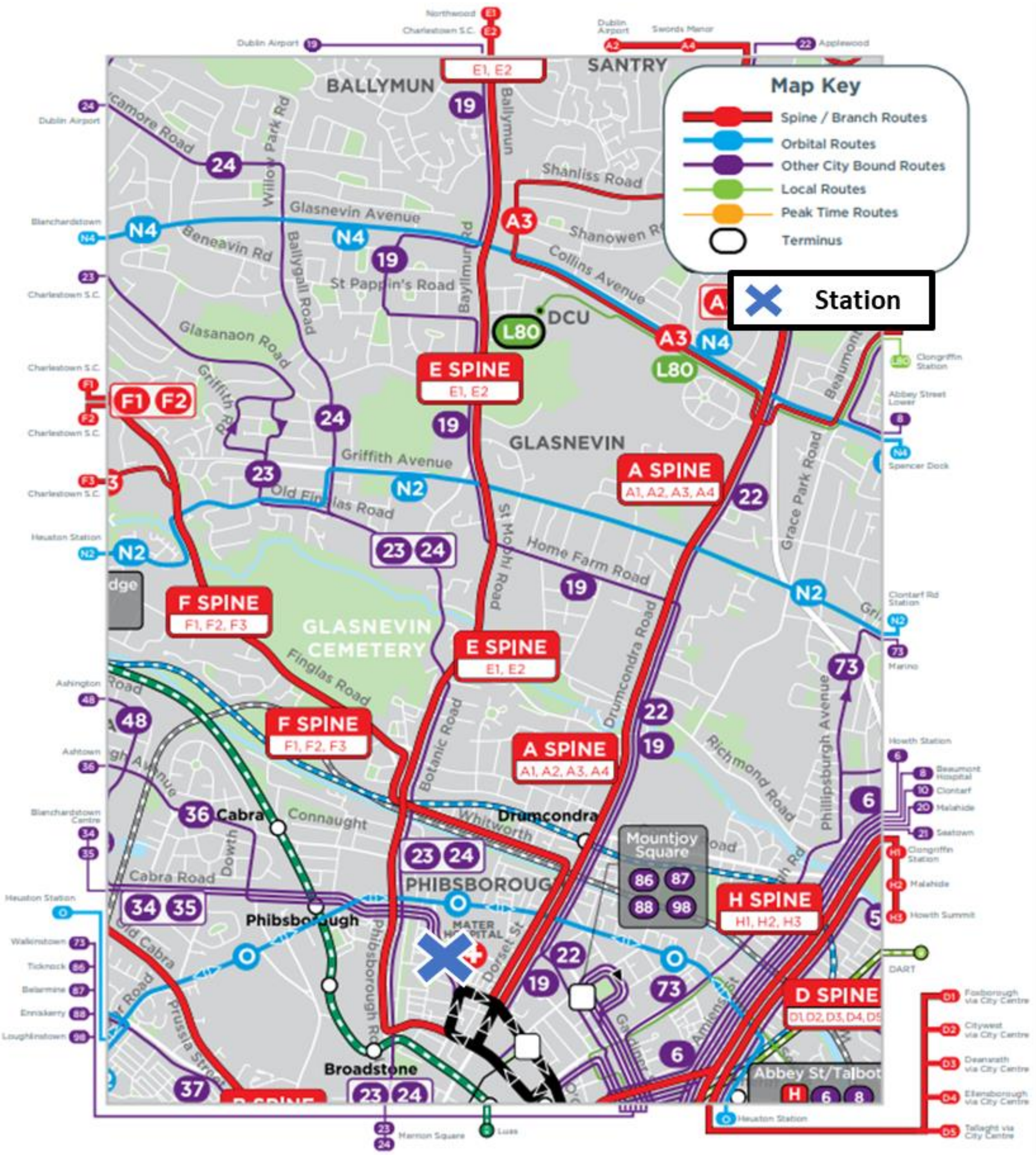


Figure 3.2: Transport facilities within a 600m buffer

3.2 Future Receiving Environment -Public Transport Network

Mater Station is also located close to the proposed A, E and F Spine corridors as part of the Bus Network Redesign, as shown in Figure 3.3 and along other city-bound and orbital routes. A, E and F Spine corridors will have a frequency of 5mins during weekdays and up to 10mins on weekends and orbital route O will operate north of the station with a frequency between 8mins and 15mins on weekdays.

Other city bound routes operating near Mater Station are 19, 22, 23, 24, 34, 35 and36. Routes 23 and 24 will have a combined frequency of 10mins or less during weekdays. The routes 34,35, and 36 routes are proposed to use Berkeley Street, the orbital route is proposed to use North Circular Road.



(Base Source: www.busconnects.ie)

Figure 3.3: Proposed Bus Network Redesign around Mater Station

3.3 Existing Road Network

Figure 3.4 illustrates the road network surrounding Mater Station. Mater Station is bound by Eccles Street and Berkeley Road. The station is located 170m south of the R101 (N Circular Road) and approximately 450m west of the N1 (Dorset Street Upper).

Local residential roads such as Goldsmith Street, O'Connell Avenue, Geraldine Street and Nelson Street are all within the immediate vicinity of the station.

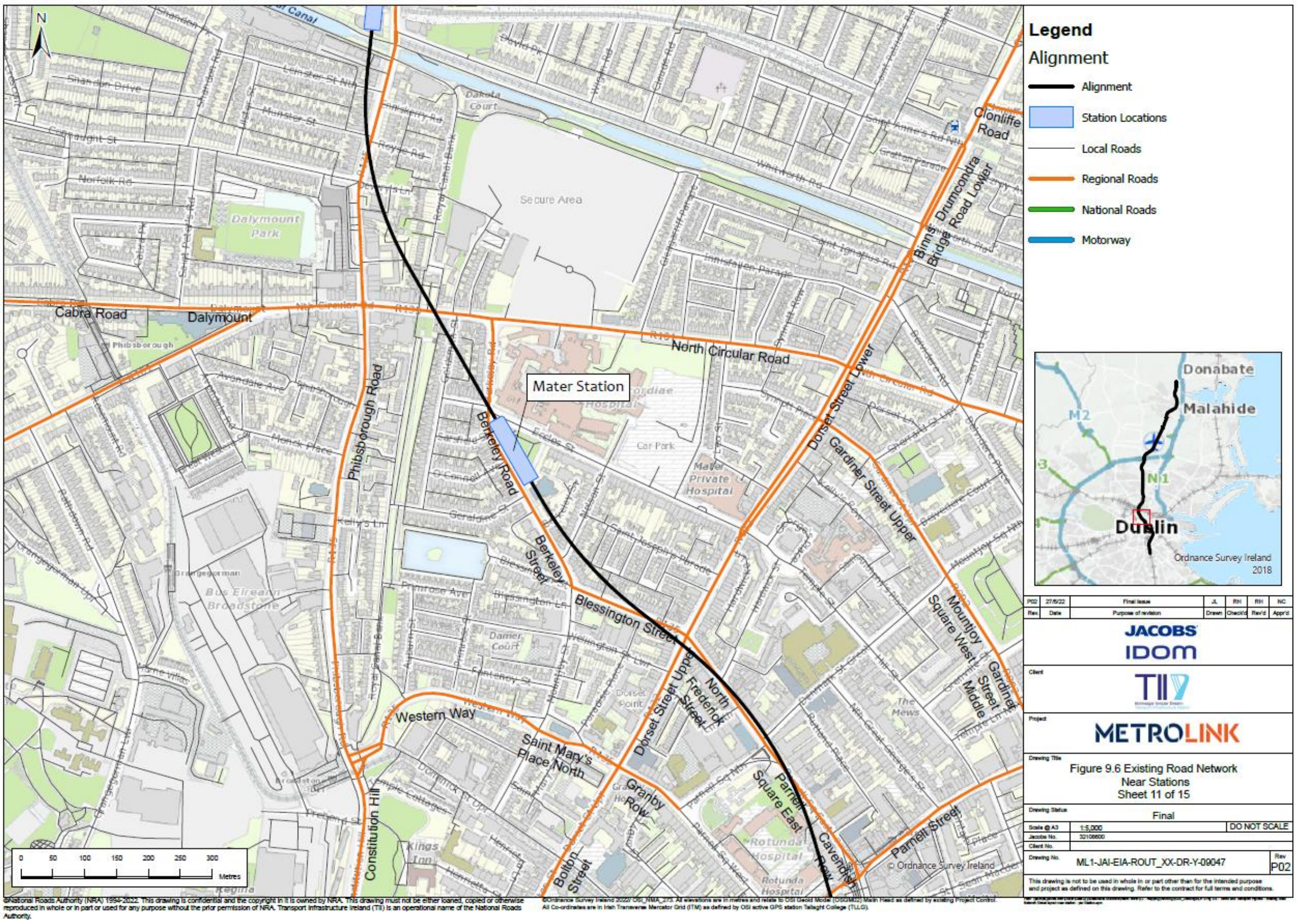


Figure 3.4: Street layout near Mater Station

Eccles Street is a two-way single carriageway to the north of the proposed Mater Station. In its most proximate location to Mater Station, traffic lanes are approximately 3m wide, with car parking available on the eastbound side of the road, and a taxi rank present along the westbound side. There are no cycle lanes provided for on Eccles Street. Eccles Street is used by ambulances to access the accident and emergency unit of the Mater Hospital. The on-street parking is pay and display and residential permit parking.

Berkeley Road is a two-way single carriageway to the south of the proposed Mater Station. In its most proximate location to the station, Berkeley Road is approximately 10m in width, with advisory cycle lanes present both northbound and southbound. There are no bus lanes on this road. However, bus-stops are located on both sides of the road, including inset bus bays northbound. Limited car-parking is also provided on both sides of the road although this overlaps with the advisory cycle lane present on the southbound carriageway. There is a loading bay to the north of the junction of Berkeley Road / O'Connell Ave. The on-street parking is pay and display and residential permit parking.

The R101/North Circular Road is a two-way three lane carriageway to the north of the proposed Mater Station. In its most proximate location to Mater Station, it is approximately 11m in width, comprising of two traffic lanes westbound, previously a shared bus and cycle lane, and one traffic lane eastbound. There are two eastbound traffic lanes approaching the Berkeley Road junction however one is a right -turn only lane. A mandatory cycle lane is present eastbound, becoming an advisory cycle lane after the Berkeley Road junction, however no cycle lane is present once the bus lane merges with traffic at the Berkeley Road junction.

Nelson Street is a one-way single carriageway to the east of the proposed Mater Station. It is approximately 9m in width. Car-parking is provided on both sides of the road, with no designated bus or cycle lanes present.

3.3.1 Junction Turning Count Locations

The Data Collection Report (ML1-JAI-TRA-ROUT_XX-RP-Y-00023) details the methodology and specification of traffic surveys undertaken for the proposed Project. The survey locations relevant to Mater Station are shown in Table 3.1. Vehicle classifications used for the survey were Car, LGV, OGV1, OGV2, PSV, Motorcycle and Pedal Cycle. PCUs values were also reported using appropriate conversion factors for each vehicle classification. The resulting PCU values from the survey results have been used for the LinSig modelling.

Table 3.1: Survey Locations around Mater Station

Junction	Type of Survey
N1 Dorset Street Lower / R101 North Circular Road	Classified Junction Turning Count (CJTC)
N1 Dorset Street Lower/ Synott Place / Gardiner Street Upper	CJTC
N1 Dorset Street Lower/ Eccles Street / Hardwicke Place	CJTC
N1 Dorset Street Lower/ Blessington Street / Frederick Street North	CJTC

3.3.2 Base Traffic Flows

The 2018 base traffic flows for the AM and PM peak periods, for the junctions detailed in Table 3.1, are provided within Appendix A Traffic Flow Diagrams.

3.4 Future Receiving Environment – Road Network

The future street level layout will maintain the existing road network on Berkeley Street. The Bus Connects Core Bus Corridor will serve the R135 Phibsborough Road to the west of the proposed station, with designated bus lanes and segregated cycle lanes.

3.5 Existing Pedestrian Network

Under DCC's pedestrian hierarchy (DCC Development Plan 2016-2022), footways along the N1 are considered as 'Historic Approaches' to Dublin City Centre. Streets in the immediate vicinity of Mater Station have no designation.

Footways on Berkeley Road are approximately 3m in width, however there is no crossing present for pedestrians on the west side of Berkeley Road. The closest crossing north of the site is where Berkeley Road intersects the R101 (150m) and the closest crossing to the south of the station is situated where Geraldine Street meets Berkeley Road (100m).

Pedestrians travelling eastbound on the R101 towards the station, via Berkeley Road, are required to walk past the junction in order to cross at a controlled crossing. There is no designated crossing point for pedestrians turning right from the R101 to Berkeley Road.

Streets within the immediate surrounding of the station such as Goldsmith Street, Sarsfield Street, O'Connell Avenue and Geraldine Street all have footways approximately 1.5m wide.

3.5.1 Pedestrian Link Counts

The Data Collection Report (ML1-JAI-TRA-ROUT_XX-RP-Y-00023) details the locations around Mater Station where pedestrian surveys were undertaken.

3.5.2 Baseline Pedestrian Accessibility Review

A baseline accessibility assessment has been undertaken to establish existing walking provision relevant to the proposed Mater Station. Catchment maps prepared for the accessibility analysis for walking are based in two criteria, the average speed for each mode and the existing road network. Therefore, maps do not reflect existing access restrictions for private roads and motorised roads.

Figure 3.5 illustrates a 5min walking, 10min walking and 15min walking catchment from the Mater Station. Table 3.2 below lists local amenities within the 5min walking, 10min walking and 15min walking from the Mater Station.

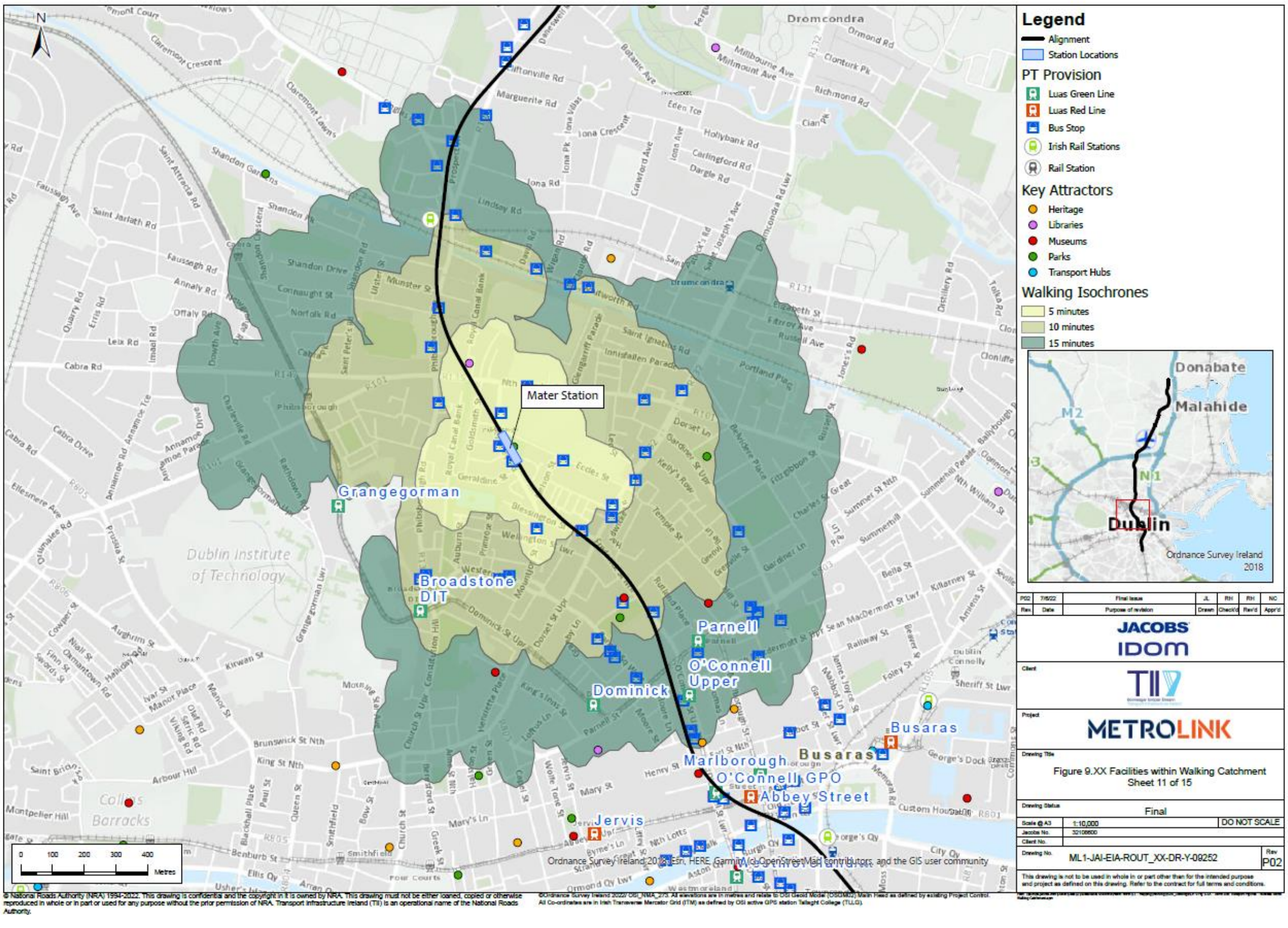


Figure 3.5: Mater Station Walking Catchment Area

Table 3.2: Local facilities and amenities within walking catchment area

Facilities within 5min walking	Facilities within 10min walking	Facilities within 15min walking
The Mater Misericordiae University Hospital	CHI at Temple Street	Rotunda Hospital
Mater Private	Dalymount Park	Mountjoy Square Park
Dublin International Youth Hostel	St Peter's Roman Catholic Church	Cineworld Cinema Dublin
Blessington Street Park (The Basin)	Phibsborough Road- Main Street	King's Inns Law School
	King's Inns Park	Technological University Dublin Bolton Street
	Broadstone DIT Luas Stop	Drumcondra Station

A pedestrian comfort assessment has been undertaken to assess the baseline volumes of pedestrians on the network surrounding Mater Station, shown in Figure 3.6. Links were assessed against DCC guidance in the first instance, and then against the TfL Pedestrian Comfort Calculator to determine the level of comfort for the available width. The full methodology adopted is detailed in the Overall Project TTA.

The assessment shows that all links comply with DCC Guidance, with the exception of Phibsborough Road (north of junction). However, despite this links falling below DCC guidelines, it has an 'Acceptable' Pedestrian Comfort Level.

At Mater Station, the main origins of passengers in the AM peak are residential areas immediately surrounding the station and Mater Hospital.

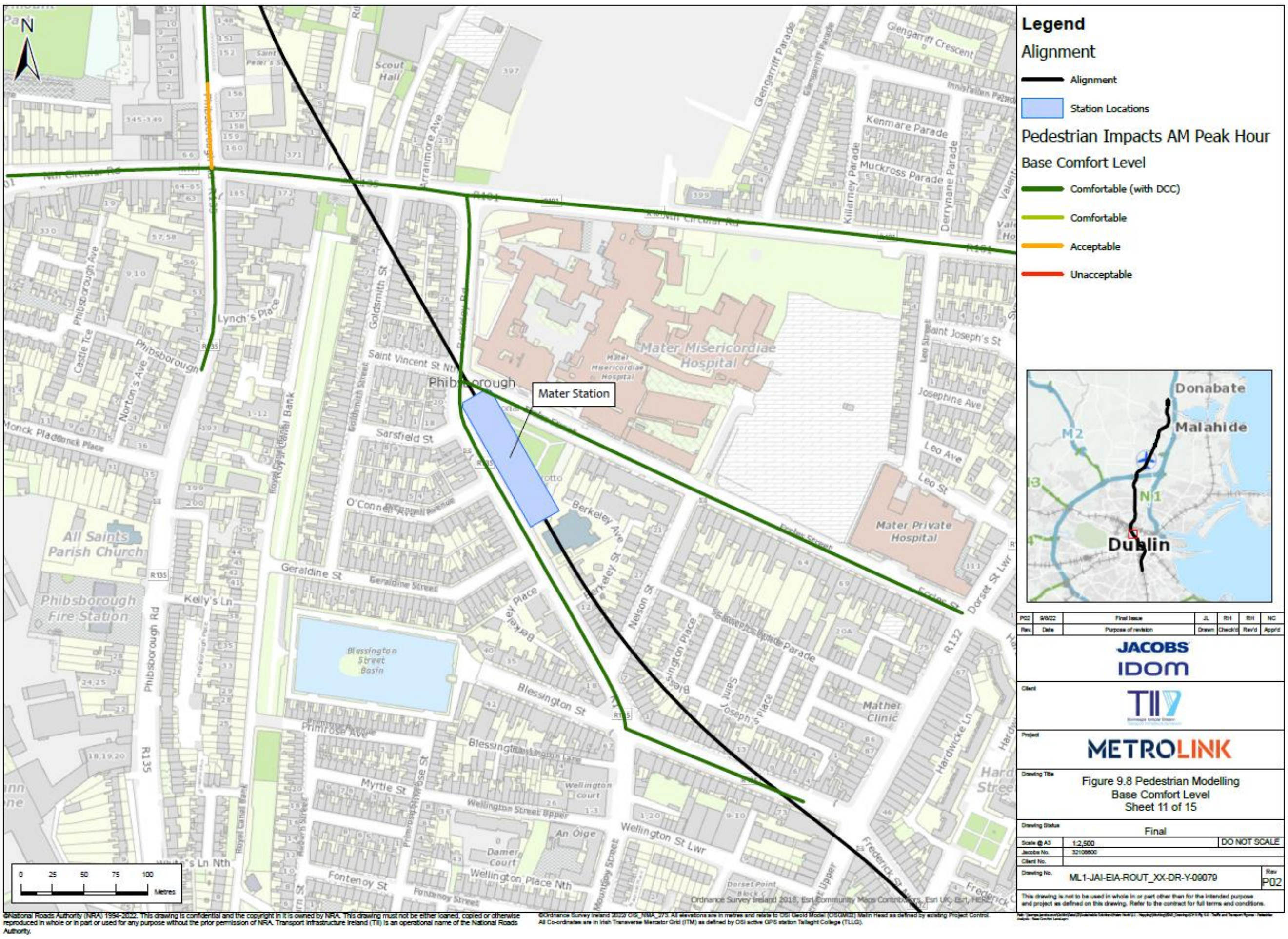


Figure 3.6: Pedestrian Comfort Assessment at Mater Station- Baseline

3.6 Future Receiving Environment – Pedestrian Network

The future street layout in the immediate vicinity of Mater Station will remain unchanged.

3.7 Existing Cycle Network

Figure 3.7 presents Mater Station within the GDA Cycle Network. The R108 to the west of the proposed station is a primary in the network, and Eccles Street and Berkeley Road are part of the Feeder Network.

On Eccles Street there is a Dublin Bike Hire hub present. There are also Sheffield cycle racks present for secure cycle storage and parking. There are no designated cycle lanes on Eccles Street.

On Berkeley Road there are advisory cycle lanes present northbound and southbound. However, north of the station, where Berkeley Road meets the R101, there is a lack of cycle crossing facilities. Similarly, where Berkeley Street intersects Blessington Street, there are advisory cycle lanes present but a lack of cycle crossing infrastructure.

On the N1, an advisory cycle lane is present southbound however, cyclists travelling northbound share the bus lane or share the road with vehicle users for some sections of the route. When joining Eccles Street from the N1, there are high levels of parked cars and no crossing facility.

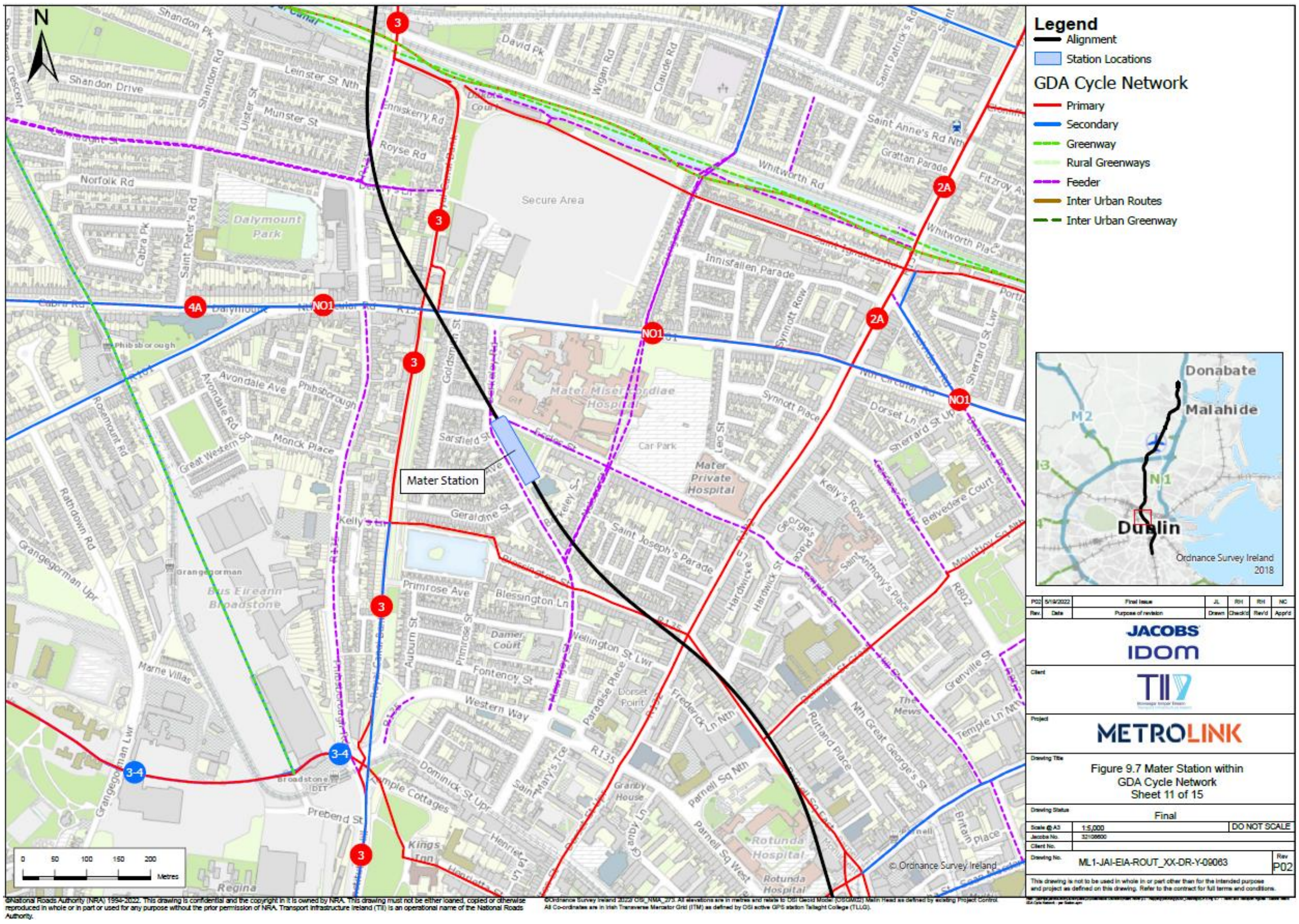


Figure 3.7: Proposed Mater Station within GDA Cycle Network

3.7.1 Baseline Cycle Accessibility Review

A baseline accessibility assessment has been undertaken to establish existing cycling provision relevant to the proposed Mater Station. Catchment maps prepared for the accessibility analysis for cycling are based in two criteria, the average speed for each mode and the existing road network. Therefore, maps do not reflect existing access restrictions for private roads and motorised roads.

Figure 3.8 illustrates a 5min cycling and 10min cycling catchment from the Mater Station and the location of existing bike racks and Dublin Bike stations in close proximity to the station.

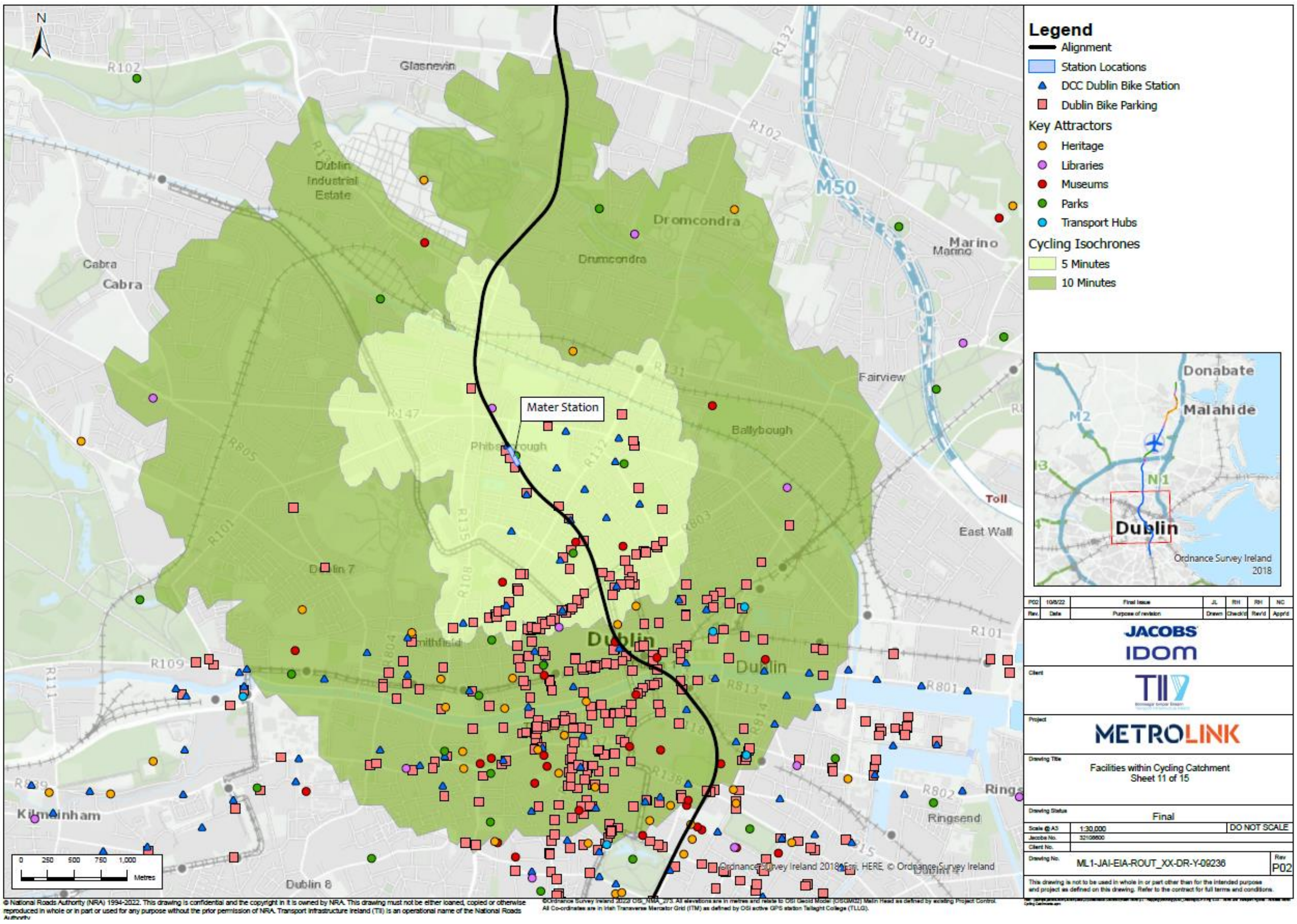


Figure 3.8: Mater Station Cycling Catchment Area

Table 3.3 presents the local facilities and amenities within the 5min and 10min cycling catchment area of Mater Station.

Table 3.3: Local facilities and amenities within cycling catchment area

Facilities within 5min cycling	Facilities within 10min cycling
The Mater Misericordiae University Hospital	O'Connell Street
Mater Private	Temple Bar
Phibsborough Road- Main Street	Grafton Street Shopping Area
Rotunda Hospital	Connolly Station
Mountjoy Square Park	Trinity College Dublin
Cineworld Cinema Dublin	Pearse Station
King's Inns Law School	National Botanic Gardens
Technological University Dublin Bolton Street	Croke Park
Drumcondra Station	St. Vincent's Hospital

3.8 Future Receiving Environment – Cycle Network

The future street level layout will maintain the current cycling infrastructure along Berkeley Road. Along the R135 Phibsborough Road, the Bus Connects Core Bus Corridor proposals will introduce designated bus lanes in each direction, and segregated cycle lanes in each direction.

4. The Proposed Project – Mater Station

4.1 Site Location and Development Context

The proposed Mater Station is located adjacent to Mater Hospital and next to St Joseph's Church. The proposed site, as shown in Figure 4.1, is situated on a greenspace area between Berkley Road and Eccles Street.

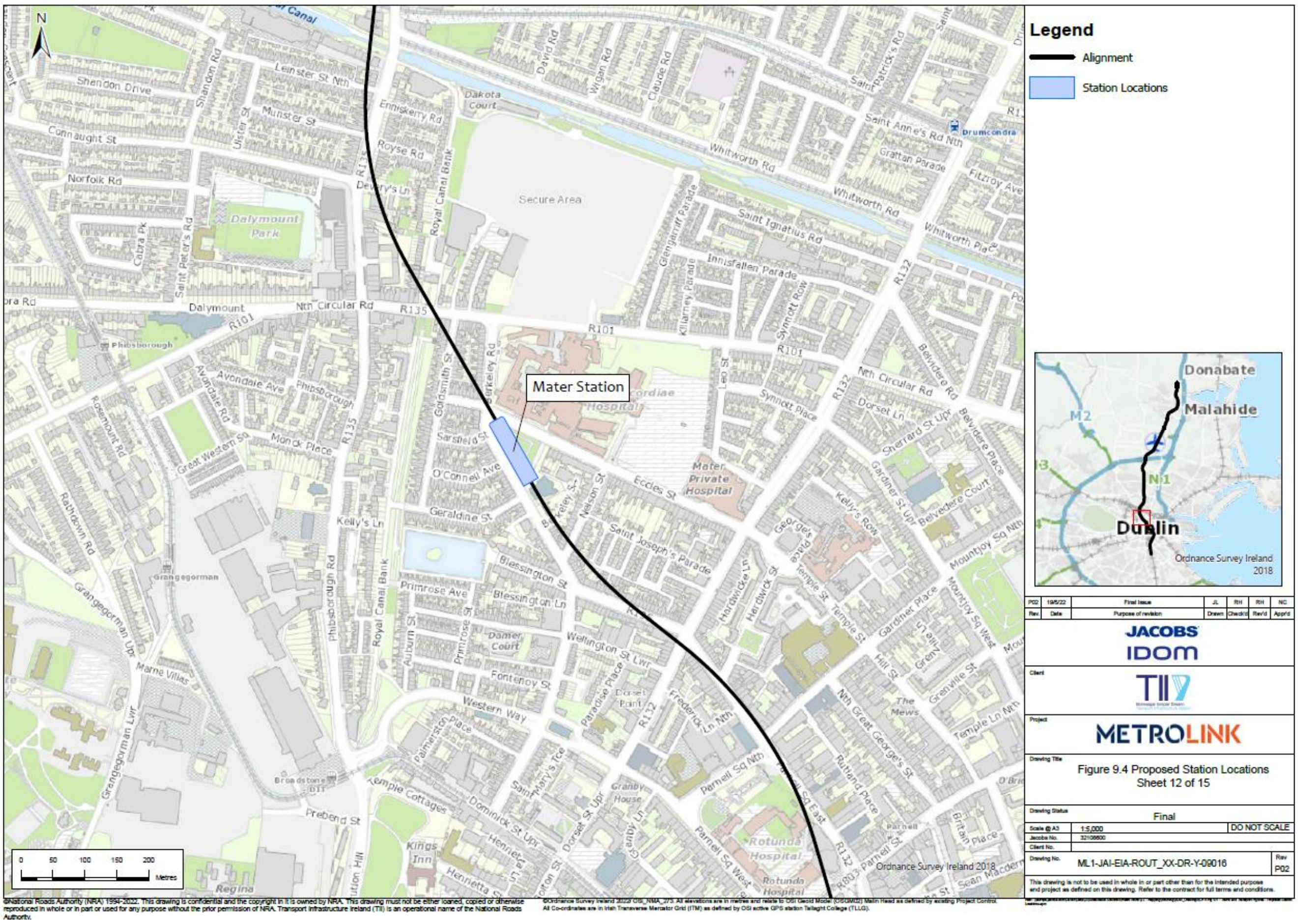


Figure 4.1: Proposed Site Location

Figure 4.2 illustrates the proposed developed layout for Mater Station, including improvements to pedestrian crossings, taxi bay, bike parking and location of entrances and exits. The station platforms can be accessed via the proposed crossings at Berkeley Road and Eccles Street. The existing bus stops on both sides of Berkeley Road are located in close proximity to the proposed access, which provides an interchange opportunity.

70 bicycle spaces will be provided at Mater Station. The size of the existing taxi bay at Eccles Street will be reduced to give space for bike parking and the rest will be maintained for taxis.

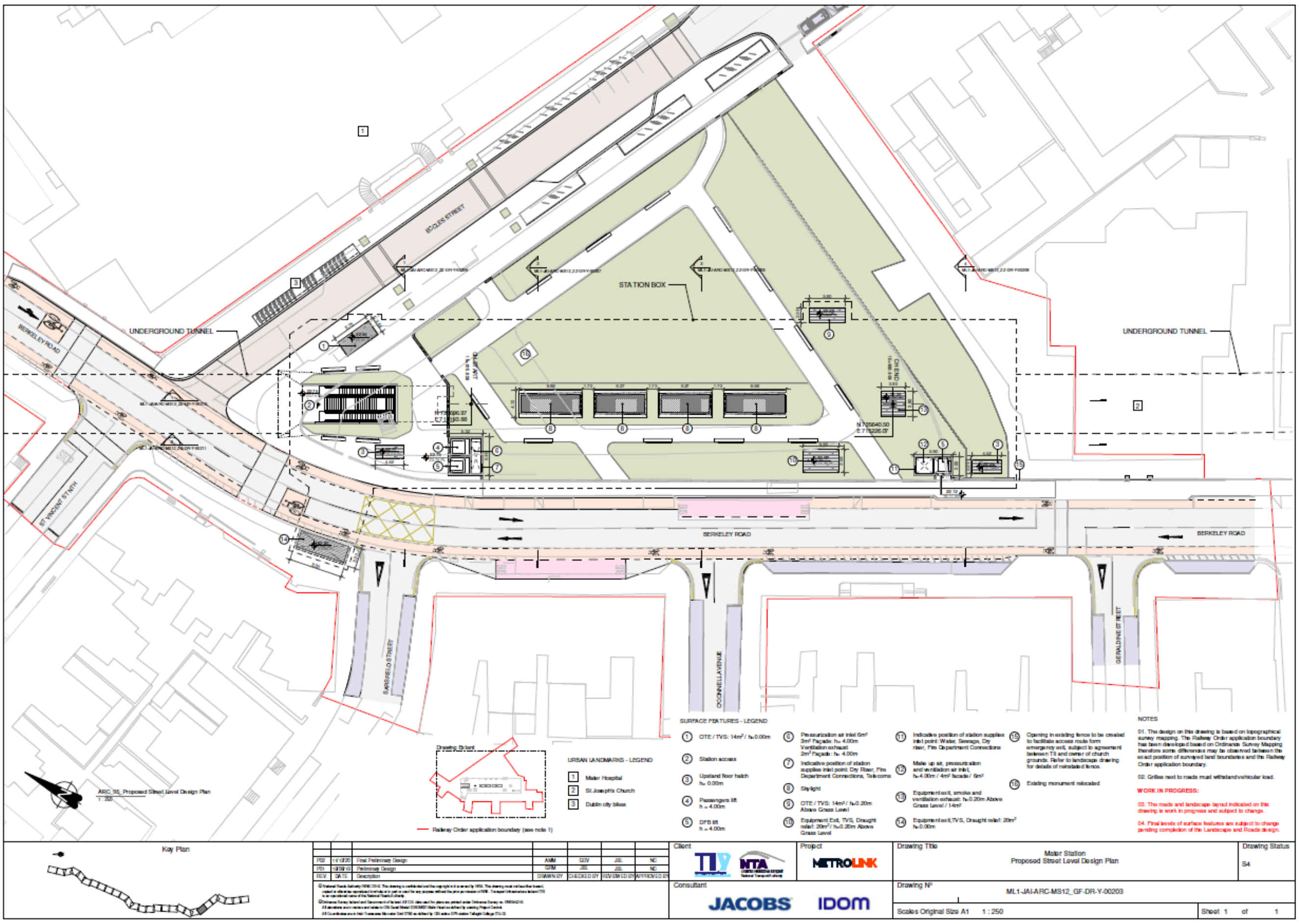


Figure 4.2: Mater Station Layout

5. Trip Generation/Attraction

5.1 Operational Phase

Traffic estimates associated with the Mater Station Operational Phase has been established by utilising the National Transport Authority's (NTA) East Regional Model (ERM). The ERM provides a comprehensive representation of multi-modal travel patterns across the Greater Dublin Area and is a suitable tool for the testing and appraisal of the proposed Project.

5.1.1 Passenger Boarding and Alighting

Passenger demand modelling has been used to predict the numbers of passengers boarding and alighting at each station, and the resulting passenger load on the Project, for the years 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). The scenarios considered for assessment for each of the years 2035, 2050 and 2065 are outlined in Table 5.1.

Table 5.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project.
Do Minimum Scenario	Committed transport schemes in the absence of the Project.
Do Something - Scenario A	Scenario with the Project and committed transport schemes only.
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for Opening year (2035) and planned schemes under the Transport Strategy for the GDA for the Design Year (2050) and the Forecast Year (2065).

5.1.1.1 Boarding and Alighting Volumes

Table 5.2 to Table 5.9 show boarding, alighting and interchange numbers for the Mater Station at different peak periods along with the destination and origins of passengers in the AM Peak. All data has been retrieved from the ERM 2016 developed by the NTA. Data in this section was obtained for the busiest hour within each of the following peak periods:

- AM: busiest hour between 07:00 – 10:00;
- LT (lunch time): busiest hour between 10:00 – 13:00;
- SR (school run): busiest hour between 13:00 – 16:00; and,
- PM: busiest hour between 16:00 – 19:00.

Figure 5.1 presents the volume of passengers boarding and alighting at Mater Station over the 12hr peak period (07:00-19:00) in both Scenario A and Scenario B. Scenario A has a higher volume of both boarding and alighting passengers than Scenario B, reaching a maximum of almost 7,200 boarding passengers in 2065, and over 6,100 alighting passengers, compared to approximately 5,100 boarding passengers and 5,000 alighting passengers in Scenario B in 2065.

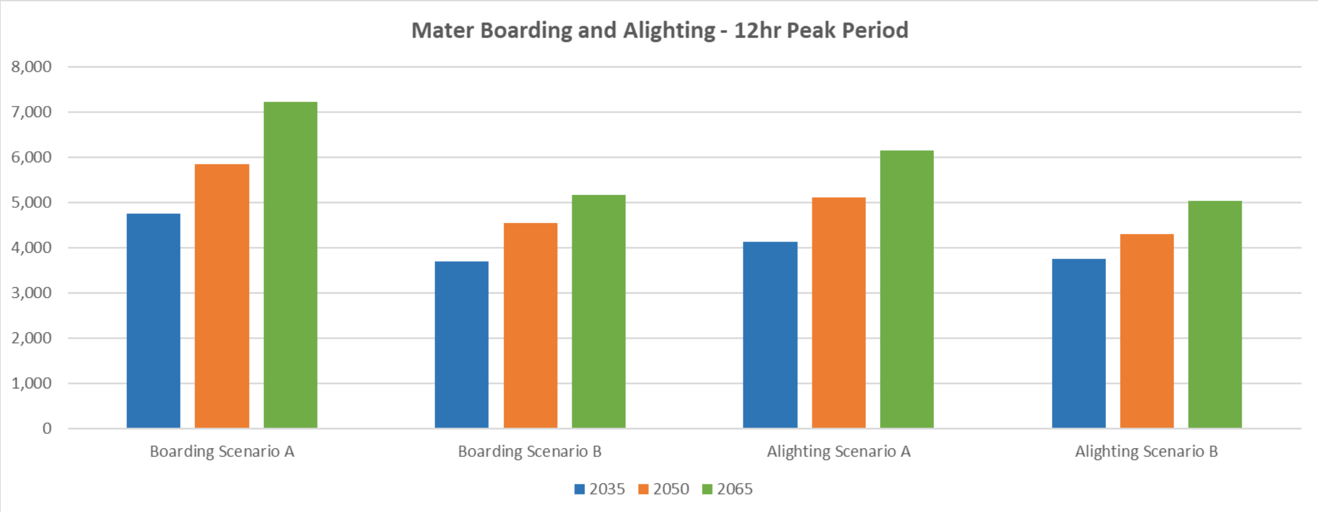


Figure 5.1: Mater Station 12hr Boarding and Alighting in Scenario A and Scenario B

5.1.1.2 Boarding and Alighting Volumes: Scenario A

Table 5.2 to Table 5.4 below highlight the boarding and alighting passenger numbers for Mater Station in Scenario A.

Table 5.2 shows the boarding and alighting passenger numbers during the Opening Year, 2035. In the AM peak hour, 375 northbound passengers and 274 southbound passengers are expected to board, while 136 northbound passengers and 544 southbound passengers are expected to alight. In the PM peak hour, 457 northbound passengers and 163 southbound passengers are expected to board, while 173 northbound passengers and 226 southbound passengers are expected to alight.

Table 5.2: Boarding and Alighting Numbers at Mater Station in 2035, Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	375	136	4,860	252	55	3,194	270	72	3,929	457	173	8,208
Southbound	274	544	10,601	73	254	3,587	51	217	3,630	163	226	3,984

Source: East Regional Model (ERM)

Table 5.3 shows the boarding and alighting passenger numbers during the year 2050. In the AM peak hour, 452 northbound passengers and 312 southbound passengers are expected to board, while 144 northbound passengers and 656 southbound passengers are expected to alight. In the PM peak hour, 551 northbound passengers and 170 southbound passengers are expected to board, while 184 northbound passengers and 262 southbound passengers are expected to alight at Mater Station.

Table 5.3: Boarding and Alighting Numbers at Mater Station in 2050, Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	452	144	5,946	345	65	4,497	372	77	4,906	551	184	10,057
Southbound	312	656	12,519	81	375	5,211	57	293	4,702	170	262	4,962

Source: East Regional Model (ERM)

For the year 2065, estimates indicate that in the AM peak hour, 531 northbound passengers and 342 southbound passengers are expected to board, while 172 northbound passengers and 792 southbound passengers are expected to alight. In the PM peak hour, 655 northbound passengers and 195 southbound passengers are expected to board, while 213 northbound passengers and 317 southbound passengers are expected to alight at Mater Station.

Table 5.4: Boarding and Alighting Numbers at Mater Station in 2065, Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	531	172	7,086	442	85	5,416	542	88	6,551	655	213	12,424
Southbound	342	792	14,936	102	455	5,963	70	352	5,876	195	317	6,203

Source: East Regional Model (ERM)

5.1.1.3 Boarding and Alighting Volumes: Scenario B

Table 5.5 to Table 5.7 below highlight the boarding and alighting passenger numbers for Mater Station in Scenario B. For the year 2035, during the AM peak hour, 260 northbound passengers and 181 southbound passengers are expected to board MetroLink vehicles at Mater Station. It is estimated that 134 northbound passengers and 477 southbound passengers will be alighting. During the PM peak hour, 386 northbound passengers and 130 southbound passengers are expected to board the proposed Project while 160 northbound passengers and 258 southbound passengers will alight.

Table 5.5: Boarding and Alighting Numbers at Mater Station in 2035, Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	260	134	4,451	198	45	3,089	226	57	4,012	386	160	7,526
Southbound	181	477	9,750	55	206	3,627	43	191	3,494	130	258	3,480

Source: East Regional Model (ERM)

Table 5.6 shows the passenger boarding and alighting numbers for the 2050 year. During the AM peak hour, it is expected that 145 passengers will board at Mater Station and head south while 353 passengers will travel north. 629 southbound passengers and 112 northbound passengers are expected to alight. During the PM peak hour, it is expected that 512 passengers will board MetroLink vehicles and head north, while 110 passengers will board and travel south. 120 northbound passengers and 280 southbound passengers are expected to alight at Mater Station during the PM peak hour.

Table 5.6: Boarding and Alighting Numbers at Mater Station in 2050, Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	353	112	5,885	286	44	4,628	306	46	4,787	512	120	8,667
Southbound	145	629	10,492	51	288	5,019	41	228	4,693	110	280	4,880

Source: East Regional Model (ERM)

It is estimated that during the year 2065, in the AM peak hour, 389 northbound passengers and 156 southbound passengers are expected to board, while 124 northbound passengers and 759 southbound passengers are expected to alight. In the PM peak hour, 571 northbound passengers and 117 southbound passengers are expected to board, while 130 northbound passengers and 305 southbound passengers are expected to alight at Mater Station.

Table 5.7: Boarding and Alighting Numbers at Mater Station in 2065, Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	389	124	6,601	327	51	5,415	391	50	6,184	571	130	9,505
Southbound	156	759	13,034	57	354	5,922	44	272	5,600	117	305	5,236

Source: East Regional Model (ERM)

5.1.1.4 Public Transport Interchange Volumes

As part of the Bus Network Redesign, Mater Station will be served by the proposed A, E and F Spine corridors, as well as multiple other city bound routes. More information on the future public transport network around the station can be found in Section 3.2 of this document.

The following tables present the volume of passengers interchanging to and from the Project with other public transport modes in Scenario A and Scenario B. Most passengers will be boarding from or have final destinations at the surrounding zones, however there are large volumes of interchange with the bus network. Most passengers are originating from, or have final destinations in, the surrounding zones. However, there are significant interchanges to and from the bus network, particularly in the AM peak hour.

Table 5.8: Transfers To/From Other Public Transport Modes in Scenario A

Scenario A									
Year	Peak	Boarding				Alighting			
		First Boarding	From Bus	From Rail/DART	From Luas	Final Stop	To Bus	To Rail/DART	To Luas
2035	AM	347	302	-	-	492	187	-	-
	PM	428	191	-	-	291	108	-	-
2050	AM	410	355	-	-	576	225	-	-
	PM	502	219	-	-	334	112	-	-
2065	AM	496	377	-	-	708	256	-	-
	PM	604	247	-	-	405	125	-	-

Source: East Regional Model (ERM)

Table 5.9: Transfers To/From Other Public Transport Modes in Scenario B

Scenario B									
Year	Peak	Boarding				Alighting			
		First Boarding	From Bus	From Rail/DART	From Luas	Final Stop	To Bus	To Rail/DART	To Luas
2035	AM	327	113	-	-	468	144	-	-
	PM	398	118	-	-	265	153	-	-
2050	AM	342	156	-	-	553	189	-	-
	PM	484	139	-	-	272	128	-	-
2065	AM	384	161	-	-	660	224	-	-
	PM	542	146	-	-	293	142	-	-

Source: East Regional Model (ERM)

5.1.1.5 Distribution of Boarding and Alighting Passengers

Figure 5.2 shows the origins of passengers arriving to board at the station and Figure 5.3 the destination of passengers alighting at Mater Station during the AM peak. The width of the lines is proportional to the number of commuters leaving/arriving at the station.

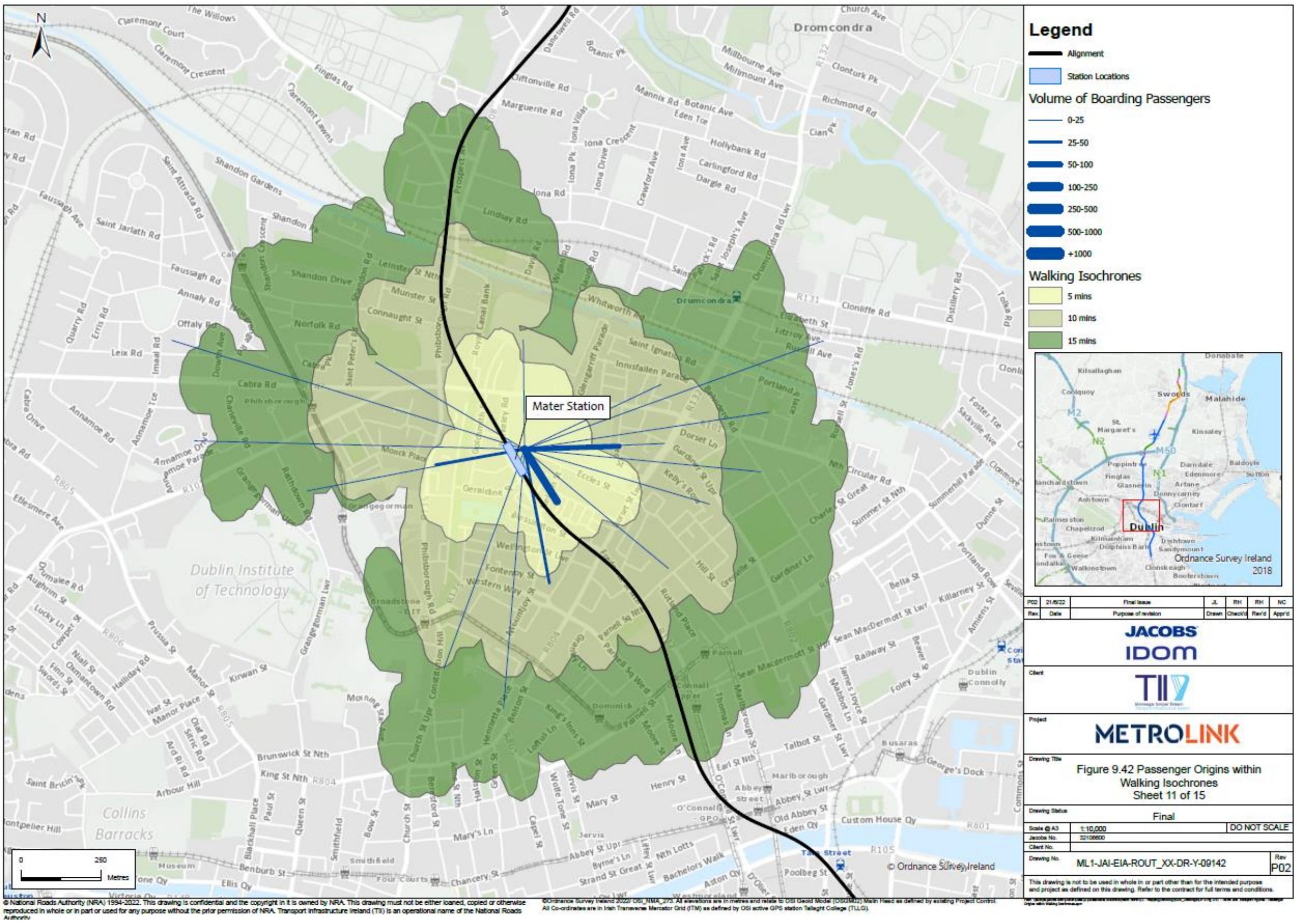


Figure 5.2: Origin of Boarding Passengers During AM peak hour and Walking Catchment Areas

The main origins of passengers in the AM peak are residential areas immediately surrounding the station and Mater Hospital. The modelling also highlights the Grangegorman area, which includes residential land, commerce, two health care centres and the Technological University Dublin is a key origin. The modelling indicates that passengers will reach the station from walking distances of 15mins around the station and span as far as Drumcondra to the east and Cabra area to the west.

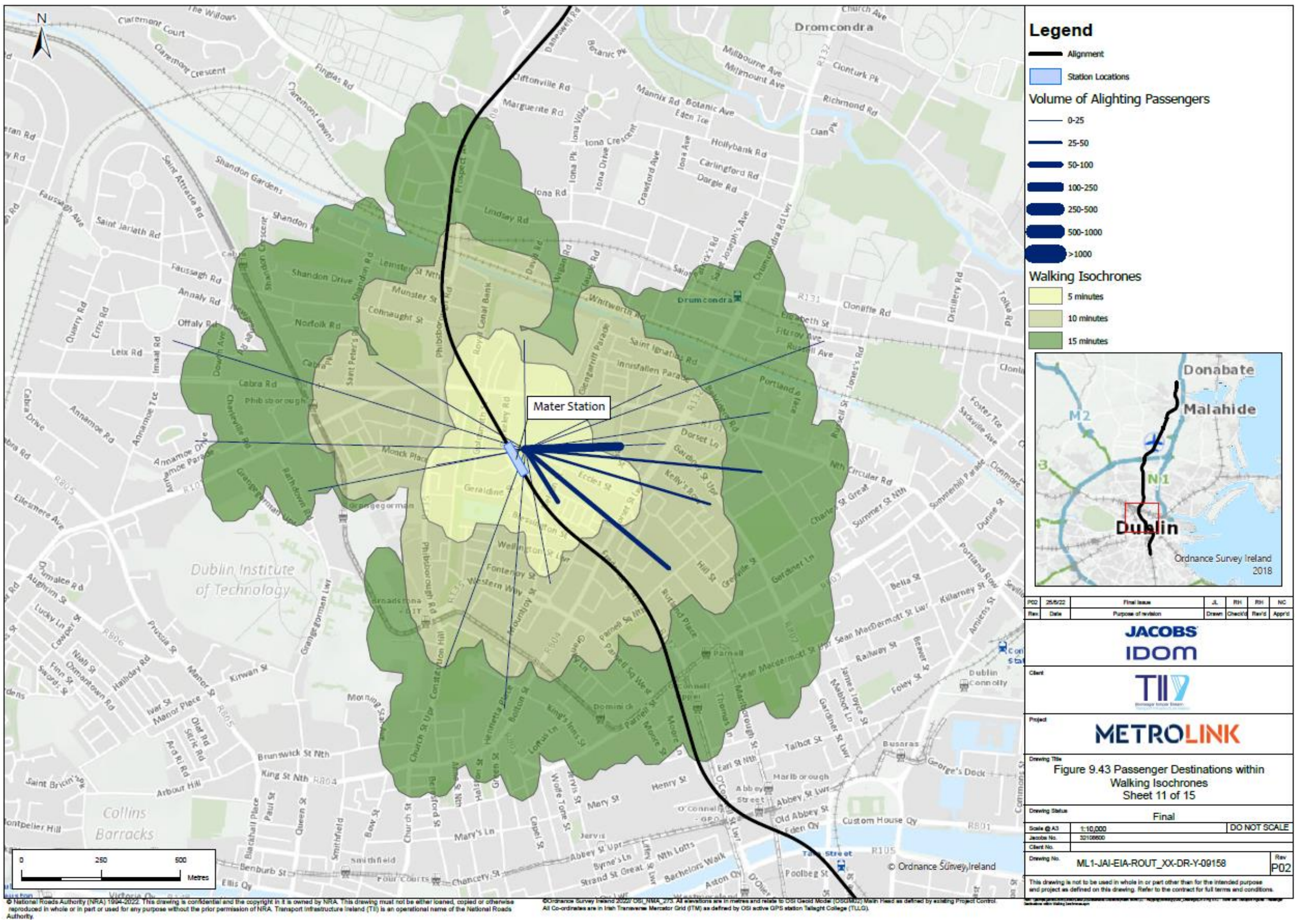


Figure 5.3: Destination for Alighting Passengers During AM peak hour and Walking Catchment Areas

The main destination for disembarking passengers in the AM peak is the mixed residential and employment area of Grangegorman at the southwest and the mixed land-use area near Mountjoy Square Park at the southeast and Mater Hospital.

6. Assessment of Impacts

6.1 Operational Phase

As part of the assessment of impacts associated with the Operational Phase of the proposed Project, the impact of the proposed Mater Station on all modes of transport has been examined – public transport (PT), general traffic, walking and cycling.

6.1.1 Public Transport Impact Assessment

The ERM has been interrogated to estimate the reduction in private car trips associated with the origin and destination trips in the zones around Mater Station. The modal split between public transport, active travel, and car users in Scenario A and Scenario B are shown in Figure 6.1 and Figure 6.2 respectively. These are based on trips made from zones within a 2km catchment of the station over a 12-hour period.

In Scenario A, PT mode share is estimated to increase by up to 2 percentage points (including the Project) compared to the Do Minimum, bringing potential PT mode share up to 40% in 2065. Car mode share is estimated to decrease by up to 1 percentage point compared to the Do Minimum, bringing it down to 21% by 2065. Active modes mode share, which includes walking and cycling, is estimated to decrease by up to 1 percentage point compared to the Do Minimum, to 39% by 2065. Overall, there will be an expected shift towards sustainable modes (PT and active modes), and a reduction in car mode share for trips made from zones around Mater Station.

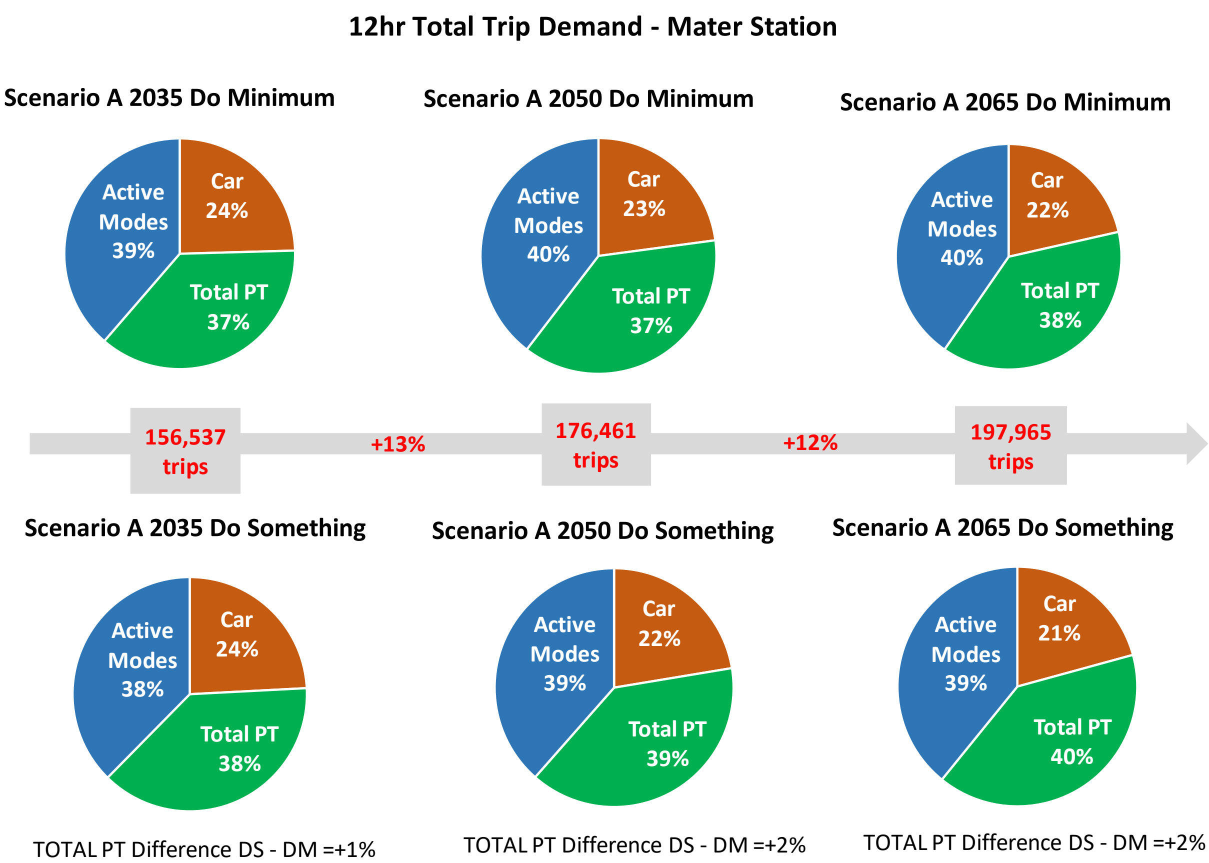


Figure 6.1: Mode Share of Trips from Zones around Mater Station - Scenario A

In Scenario B, PT mode share is estimated to increase by up to 2 percentage points (including the Project) compared to the Do Minimum, bringing potential PT mode share up to 42% in 2050 and 2065. Car mode share is estimated to decrease by up to 1 percentage point compared to the Do Minimum, bringing it down to 21% by 2065. Active modes mode share, which includes walking and cycling, is estimated to decrease by up to 1 percentage point compared to the Do Minimum, to 37% by 2065. Overall, there will be an expected shift towards sustainable modes (PT and active modes), and a reduction in car mode share for trips made from zones around Mater Station.

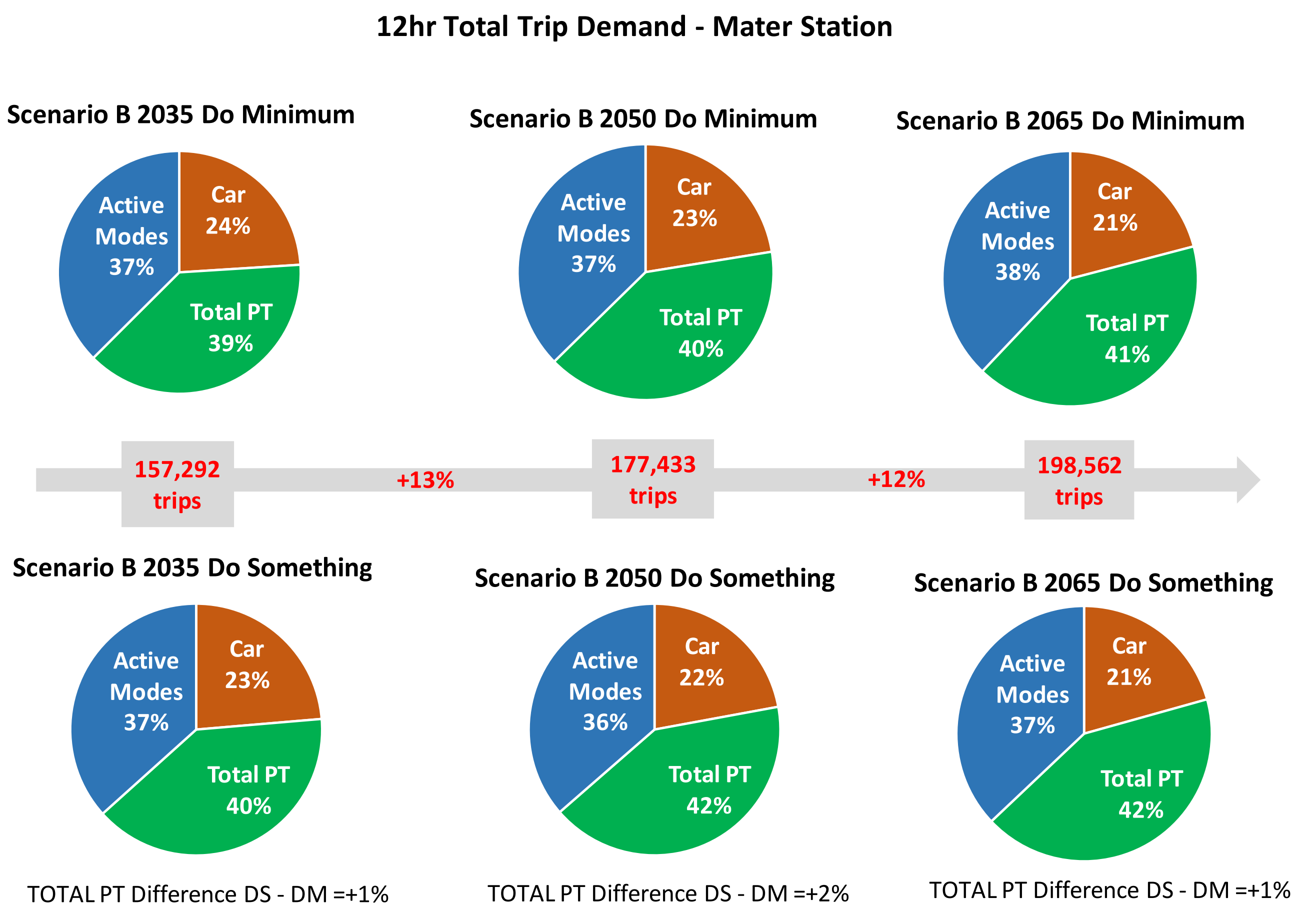


Figure 6.2: Mode Share of Trips from Zones around Mater Station – Scenario B

Figure 6.3 presents the changes in public transport mode share between the Do Minimum and Do Something scenarios in Scenario A 2065 AM Peak Hour, while Figure 6.4 presents the same for Scenario B 2065 AM Peak Hour.

In the AM peak hour of 2035, 2050, and 2065, for both Scenario A and Scenario B, most zones around Mater Station see estimated increase in PT mode share (including the Project) of 1-5 percentage points. For Scenario A, the zone north of the station, which includes Mater Hospital, will see estimate increase in PT mode share (including the Project) of 5-10 percentage points by 2050; and this increase extends to the zone further north of that, which includes Mountjoy Prison, by 2065.

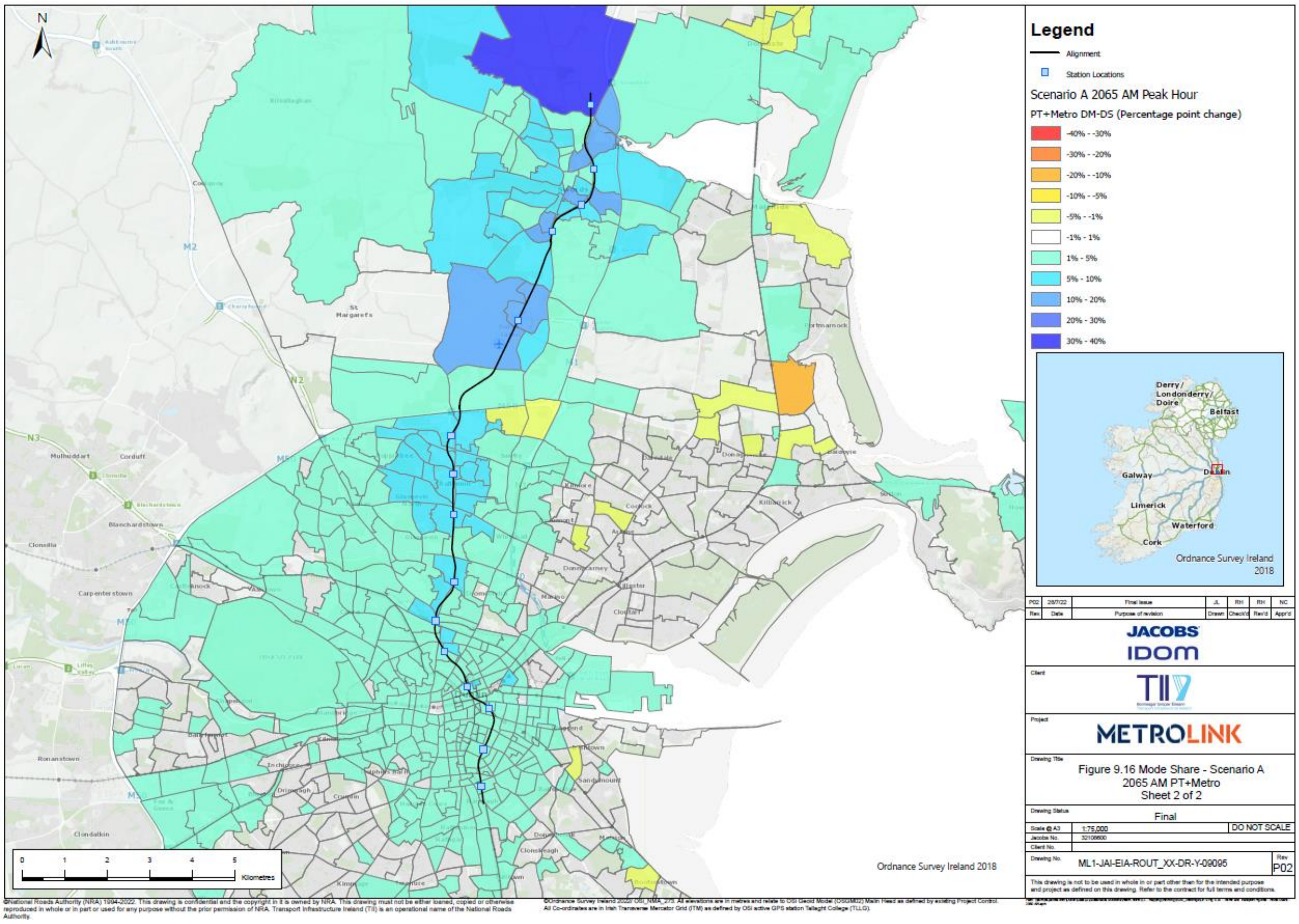


Figure 6.3: Changes in Public Transport Mode Share (including the Project) in Scenario A 2065 AM Peak Hour

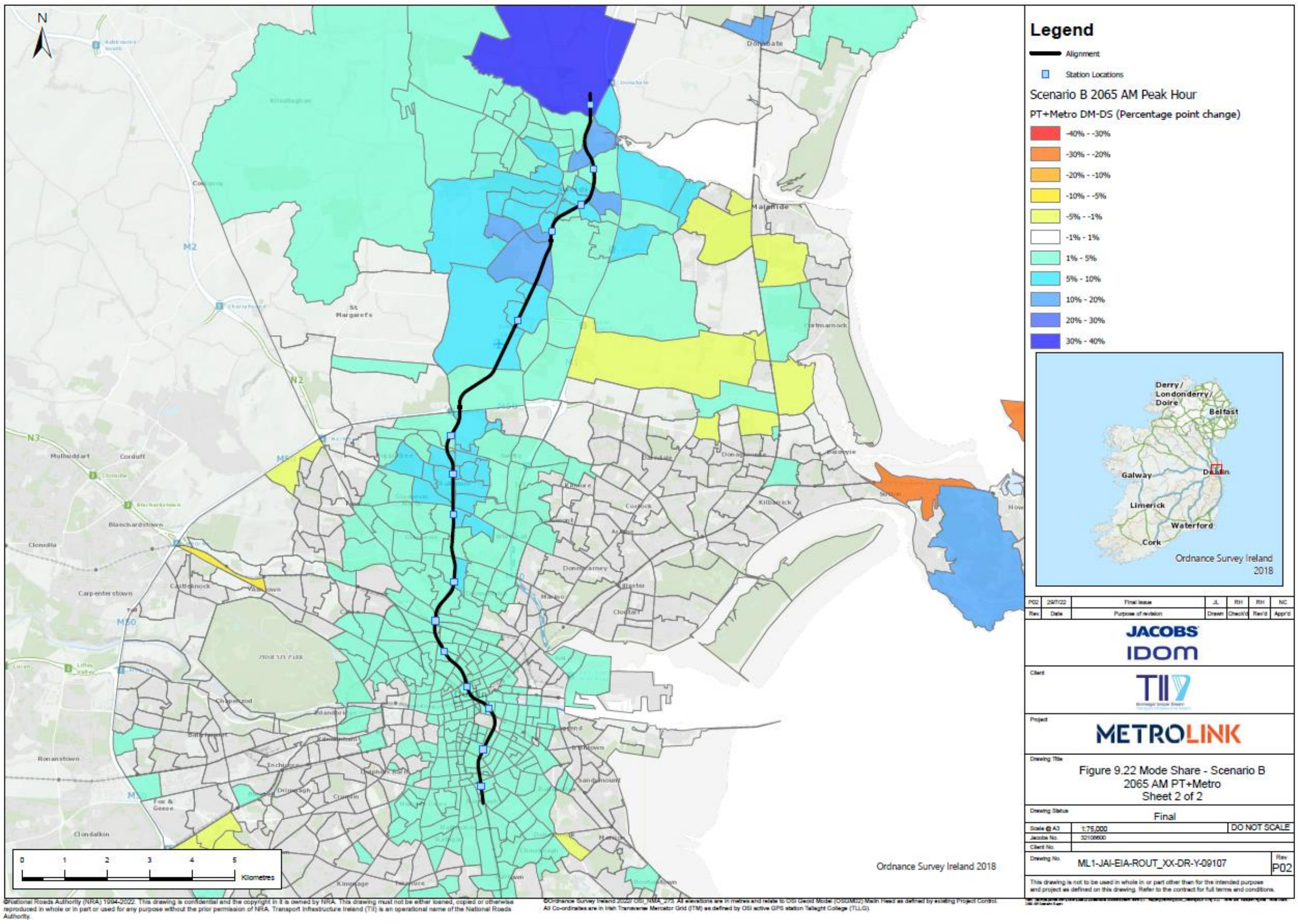


Figure 6.4: Changes in Public Transport Mode Share (including the Project) in Scenario B 2065 AM Peak Hour

End-to-end public-transport-only journey time comparisons between Do Minimum and Do Something scenarios, including interchange between the Project and other public transport modes, have been undertaken to investigate benefits to journey time with the proposed Project in place in both Scenario A and Scenario B. The assessments were carried out for zones located across the city as illustrated in Figure 6.5 and Table 6.1. These zones have been identified using local knowledge of population settlements and trip attractors.

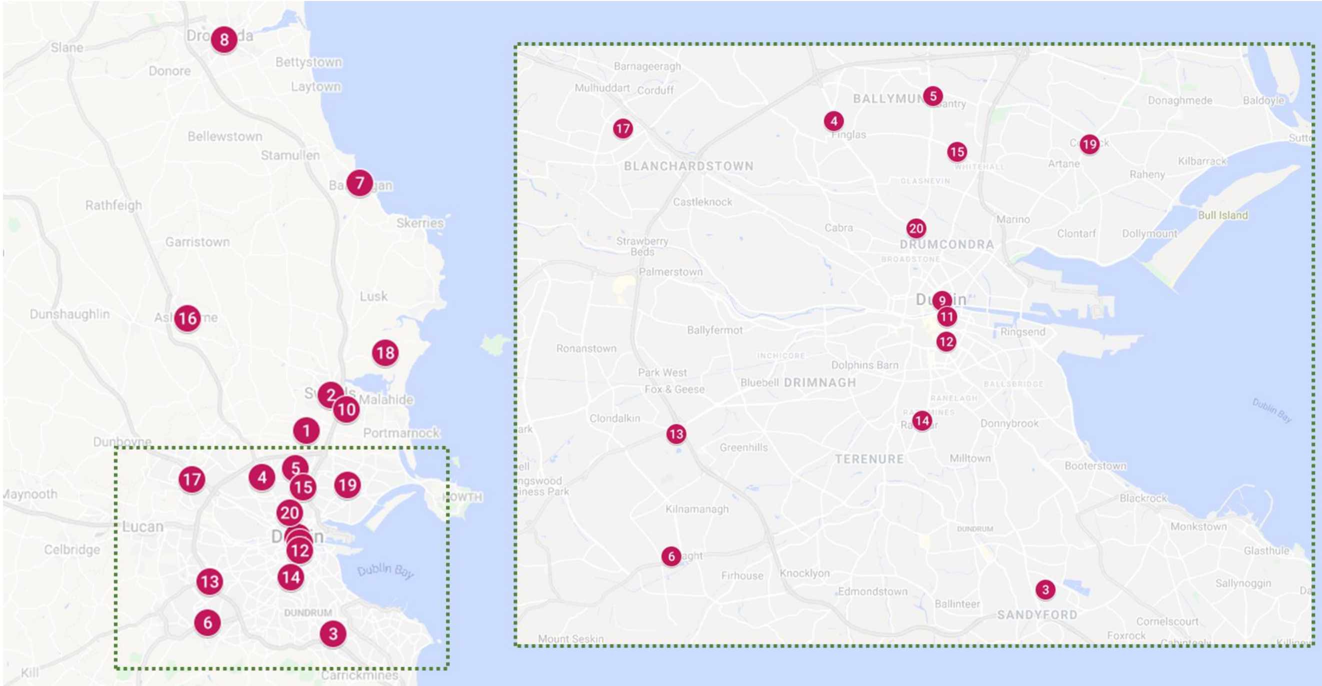


Figure 6.5: Zones assessed for public transport journey time

Table 6.1: Zones assessed for public transport journey time

Nb	Location	Nb	Location	Nb	Location	Nb	Location
1	Dublin Airport	**6**	Tallaght	**11**	College Street	**16**	Ashbourne
2	Swords Pavilion	**7**	Balbriggan	**12**	St. Stephen's Green	**17**	Blanchardstown
3	Sandyford	**8**	Drogheda	**13**	Red Cow	**18**	Donabate
4	Finglas	**9**	O'Connell Street	**14**	Rathgar	**19**	Coolock
5	Ballymun	**10**	Sword East	**15**	DCU	**20**	Glasnevin

Mater Station is located within the Glasnevin zone/ area.

In Scenario A the following changes to journey times are observed:

- The most significant journey time savings from the Glasnevin area would be to the Swords Pavilion area, of approximately 40 minutes in the 2035, 2050, and 2065 AM period. This is a reduction of over 50% compared to the Do Minimum scenario.
- Public transport journeys from the Glasnevin area to other areas in north Dublin, such as Swords East, will see savings of approximately 23 minutes in the 2035 AM period and rising to 27 minutes in the 2065 AM period; and to Dublin Airport, savings of approximately 24 minutes in the 2035, 2050, and 2065 AM period, which is a reduction of approximately 50% compared to the Do Minimum scenario.
- Public transport journeys from the Glasnevin area to key Dublin City Centre locations such as O'Connell Street area and St. Stephen's Green area will see savings of between 4 and 10 minutes in the 2035, 2050, and 2065 AM period when the proposed Project is in place.
- Public transport journeys from the Glasnevin area to areas in south Dublin, such as Sandyford, will see savings of approximately 18 minutes in the 2035, 2050, and 2065 AM period.

In Scenario B the following changes to journey times are observed:

- The most significant journey time savings from the Glasnevin area would be to the Swords Pavilion area, of approximately 26 minutes in the 2035 AM period, and rising to 31 minutes in the 2065 AM period. This is a reduction of approximately 50% compared to the Do Minimum scenario.
- Public transport journeys from the Glasnevin area to Dublin Airport will see savings of approximately 27 minutes in the 2035 AM period, and approximately 23 minutes in the 2050 and 2065 AM period. This is a reduction of approximately 50% compared to the Do Minimum scenario.
- Public transport journeys from the Glasnevin area to key Dublin City Centre locations such as O'Connell Street area and St. Stephen's Green area will see savings of between 1 and 6 minutes in the 2035, 2050, and 2065 AM period when the proposed Project is in place.
- Public transport journeys from the Glasnevin area to areas in south Dublin, such as Sandyford and Rathgar Road area, will see savings of between 11 and 16 minutes in the 2035, 2050, and 2065 AM period.

6.1.2 Traffic Impact Assessment

Due to its proximity to the station entrance and associated pedestrian activity, the junction of Berkeley Road, Eccles Street and St Vincent's Road North has been proposed for signalisation, with provision for pedestrian crossings on every arm. The width of Eccles Street will be reduced at the junction. Provision of shared space will be incorporated on Eccles Street in the vicinity of the junction with Berkeley Road.

Table 6.2 presents the results from the LinSig analysis undertaken at proposed signalised junction of Berkeley Road, Eccles Street and St Vincent's Road North in 2035 for Scenario B. In both the AM and PM peak hours of 2035, the proposed signalised junction is expected to operate within capacity.

Table 6.2: LinSig Model Result Summary – Berkeley Road/ Eccles Street/ St Vincent's Road North Signalised Junction: 2035 Peak Hour

Arm	Lane	AM Peak		PM Peak	
		Degree of Saturation [%]	Mean Max Queue [PCU]	Degree of Saturation [%]	Mean Max Queue [PCU]
Berkeley Road (Southbound)	Left Ahead Right	45.9	10.1	45.5	8.6
St Vincent Street North	Left Ahead Right	0.0	0.0	0.0	0.0
Eccles Street	Left Ahead Right	87.7	7.9	75.9	12.9
Berkeley Road (Northbound)	Left Ahead Right	90.7	18.4	75.7	10.0
Practical Reserve Capacity (PRC)		**-0.8**		**18.6**	

Figure 6.6 presents the changes in Car mode share per zone in Scenario A 2065 AM peak hour, with Figure 6.7 presenting the same for Scenario B 2065 AM peak hour.

The 2035 AM peak hour sees a reduction of 1-5 percentage points in private car mode share for trips to and from zones immediately east and north of the station; and this extends to other zones around the station in 2050 and in 2065. In Scenario A, the 2065 AM peak hour sees a reduction of 5-10 percentage points in private car mode share for trips to and from the zone immediately north of the station, which includes Mater Hospital.

Over the modelled 12-hour period, the zones within a 2km radius of Mater Station see a reduction of over 290 car trips between the Scenario A 2035 Do Minimum and Do Something scenarios, reaching a reduction of over 650 trips in Scenario A 2050. In 2065, there is a reduction of 1,000 car trips between the Do Minimum and Do Something scenarios. In Scenario B, these zones see a reduction of over 260 car trips between the 2035 Do Minimum and Do Something scenarios, with a reduction of 250 car trips in 2050. 2065 sees a reduction of 240 car trips between the Do Minimum and Do Something scenarios.

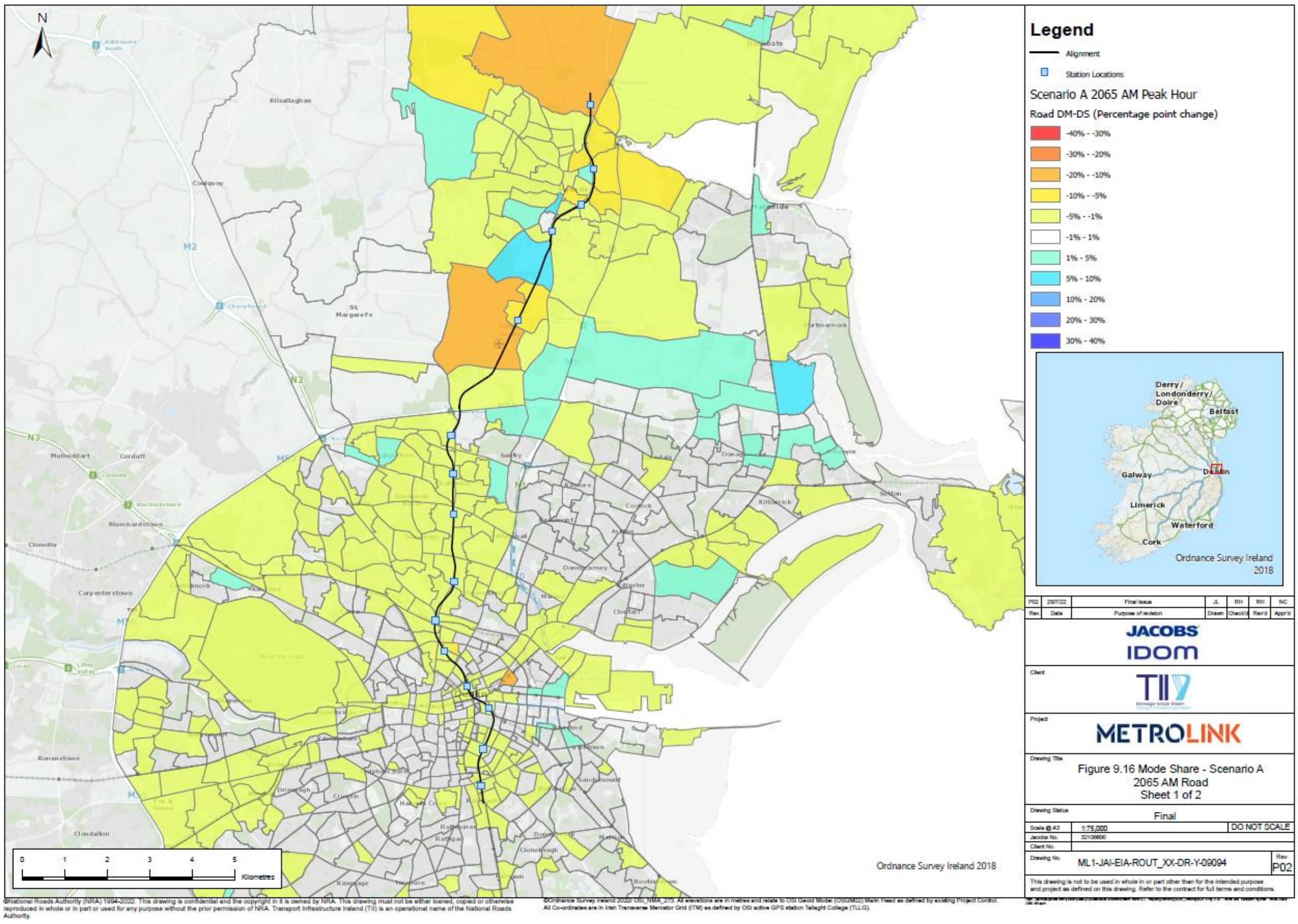


Figure 6.6: Changes in Car Mode Share in Scenario A 2065 AM Peak Hour

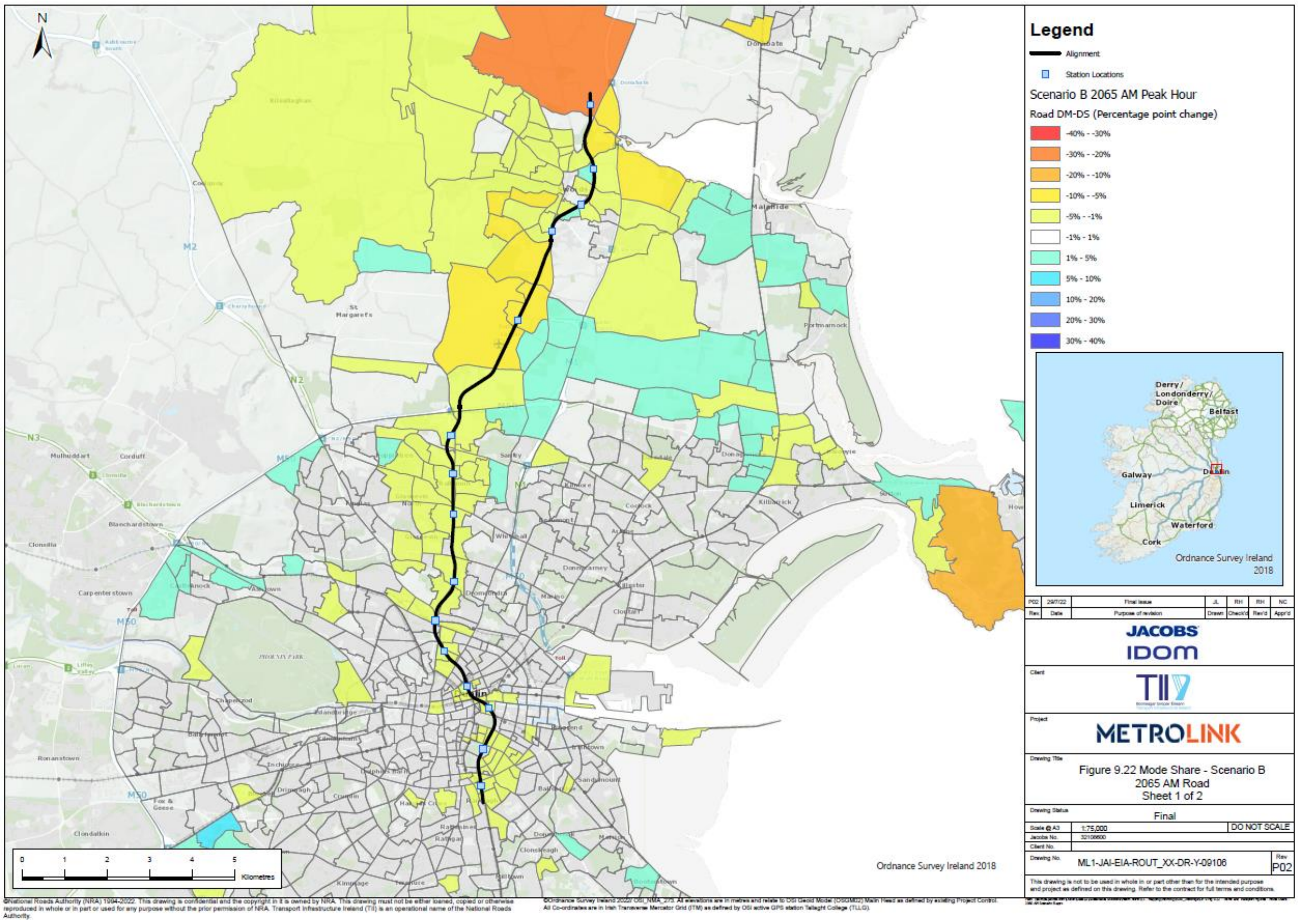


Figure 6.7: Changes in Car Mode Share in Scenario B 2065 AM Peak Hour

6.1.3 Pedestrian Impact Assessment

Due to its proximity to the station entrance and associated pedestrian activity, the junction of Berkeley Road, Eccles Street and St Vincent's Road North has been proposed for signalisation, with provision for pedestrian crossings on every arm. Provision of shared space will be incorporated on Eccles Street in the vicinity of the junction with Berkeley Road.

An assessment of the pedestrian provision around the station has been undertaken, in order to confirm its robustness in catering for the additional demand associated with the proposed project. The assessment comprises of a 'Footway Comfort Assessment', which predicts the pedestrian comfort levels based on industry guidance, taking cognisance of factors including pedestrian demand and footway width. Furthermore, an additional assessment has been undertaken in order to determine the adequacy of pedestrian crossing provisions in catering for predicted station demand.

The Scenario A 2050 design year was assessed, with Scenario A 2065 also assessed as the 'worst-case scenario' for passenger numbers, as this scenario has the highest volume of total AM passenger demand in the future year between both Scenario A and Scenario B (almost 61,000 AM boarding passengers across the alignment in Scenario A, compared to almost 55,000 AM boarding passengers in Scenario B). At all stations, the passenger demand in the AM peak hour is lower in Scenario B than in Scenario A, with the exception of Fosterstown Station where there is a 12% increase in Scenario B. As such, Scenario B has not been assessed, with the exception of Fosterstown Station to ensure that all possible significant impacts are accounted for.

Figure 6.8 and Figure 6.9 show the respective pedestrian comfort assessments for Scenario A 2050 AM peak hour and for Scenario A 2065 AM peak hour.

The assessment indicates that all links around Mater Station comply with DCC guidance and are deemed 'Comfortable' in 2050.

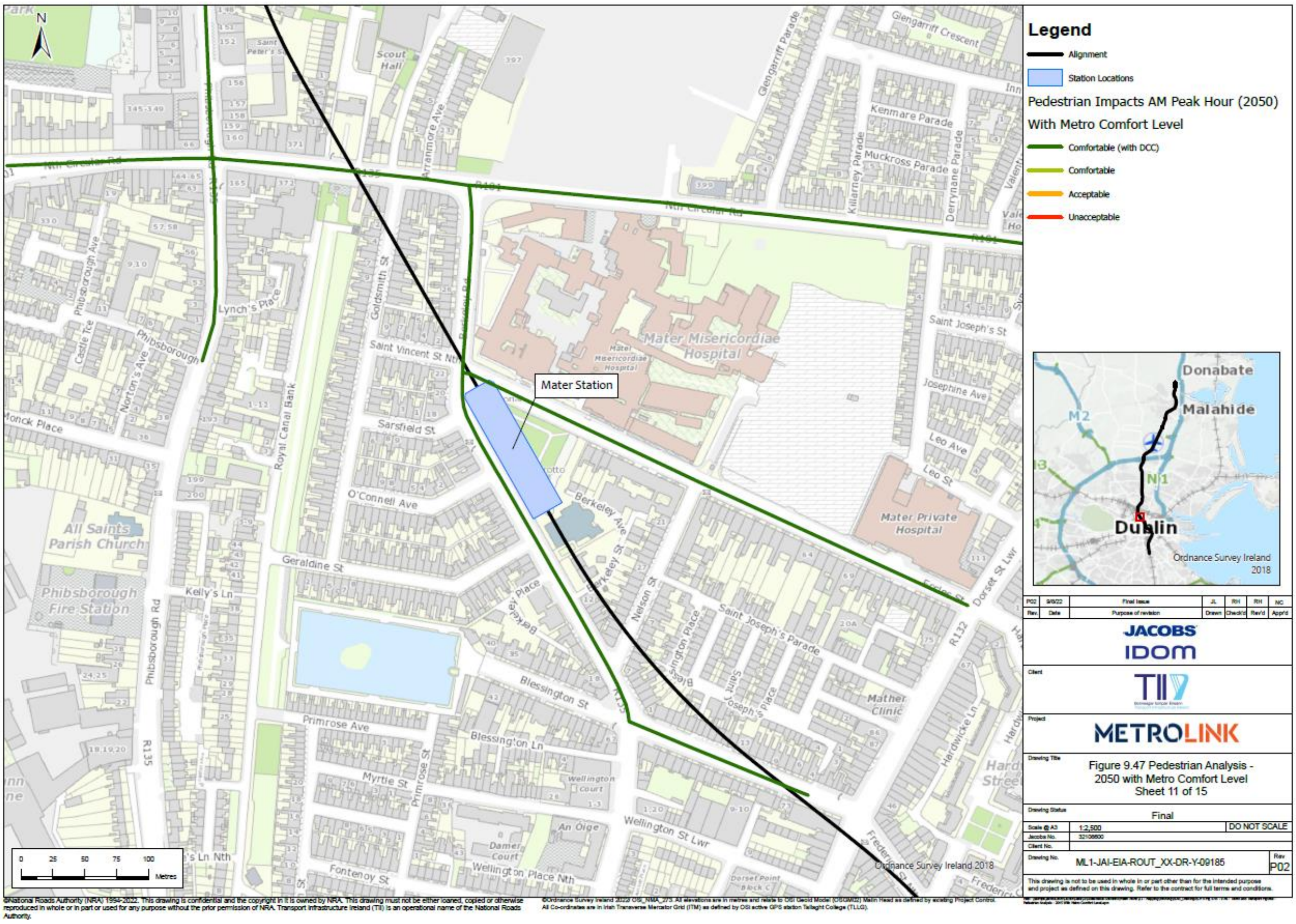


Figure 6.8: Pedestrian Comfort Assessment in Scenario A 2050 AM Peak Hour

The 2065 AM peak hour assessment indicates that the North Circular Road, west of Phibsborough Road will fall below DCC guidelines in this scenario, with an 'Acceptable' comfort level.

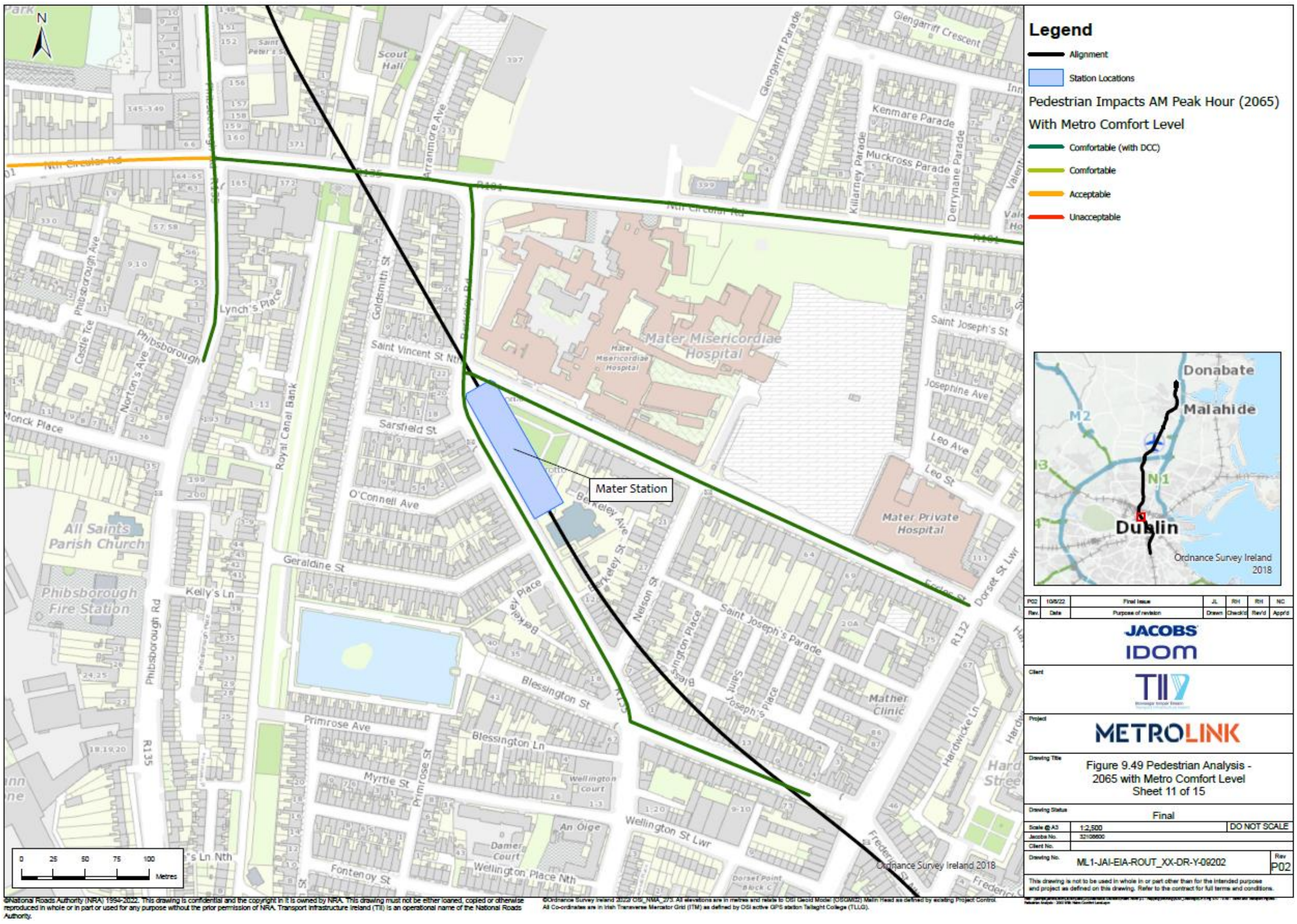


Figure 6.9: Pedestrian Comfort Assessment in Scenario A 2065 AM Peak Hour

6.1.4 Cyclist Impact Assessment

The future street level layout will maintain the current cycling infrastructure along Berkeley Road within the Project Boundary, with a one-way cycle lane in each direction. As such, there will be no negative impact to the Quality of Service in this area.

A methodology has been applied to determine the potential demand for cycle parking at each of the stations. This methodology utilises the number of boarding and alighting passengers, the distance of origin/destinations from the station, and the location of the station. The passenger demand from an earlier Opening Year has been utilised to determine the potential cycle demand in the Opening Year, and in the Opening Year +5 Years.

This approach has informed the design and the number of cycle parking spaces provided at each station. Other factors such as the availability of land, potential future land uses and parking supply and the location of the station have also been taken into consideration by the design team in determining the quantum of cycle parking spaces provided.

For the Mater Station, a total of 70 cycle spaces are proposed.

6.1.5 Road Safety

A Stage 1 Road Safety Audit has been undertaken for all of the proposed highway works for the Project. This is under a separate cover.

7. Summary

In Scenario A, Mater Station will facilitate over 8,800 passenger movements over the 12hr peak period (07:00-19:00) in 2035, rising to over 10,900 in 2050 and 13,300 in 2065. In Scenario B, Mater Station will facilitate over 7,400 passenger movements over the 12hr peak period (07:00-19:00) in 2035, rising to over 8,800 in 2050 and 10,200 in 2065.

The main catchment origins and destinations of the people boarding and alighting at the Mater Station will be:

- Origins from the Mater Hospital, and Grangegorman which includes residential and commercial land use, two primary health care centres and the Technological University of Dublin campus.

- Destinations at the mixed residential and employment area of Grangegorman at the southwest and the mixed land-use area near Mountjoy Square Park at the south-east and Mater Hospital.

The proposed Project is expected to result in increases in public transport mode share of 1-5 percentage points for trips to and from zones surrounding Mater station, in both Scenario A and Scenario B. Conversely, there will be an expected reduction in road mode share of 1-5 percentage points for trips to and from zones surrounding the station, in both scenarios.

The proposed Project will result in improvements to the public transport journey times for people in the area. AM period public transport journeys from Glasnevin area to Swords Pavilion area are expected to see time savings of approximately 40 minutes in both Scenario A and Scenario B, by 2065. AM period public transport journeys from Glasnevin area to Dublin Airport are expected to see time savings of approximately 24 minutes in Scenario A, and 23 minutes in Scenario B, by 2065. These are time savings of approximately 50% compared to the Do Minimum.

The station will also provide for 70 cycle parking spaces. It is anticipated that the future receiving pedestrian environment will sufficiently accommodate the predicted passenger demand, with only the North Circular Road falling below DCC guidelines in the worst-case scenario, however it is deemed to have an ‘Acceptable’ pedestrian comfort level.

In overall terms, the Mater Station will provide for improvements to the public transport network resulting in decreases in private car usage/trips, increases in public transport usages and will facilitate walking and cycling to the station, without significantly impacting on the operation of the road network in the area.

Appendix A. Traffic Flow Diagrams

Base Flows

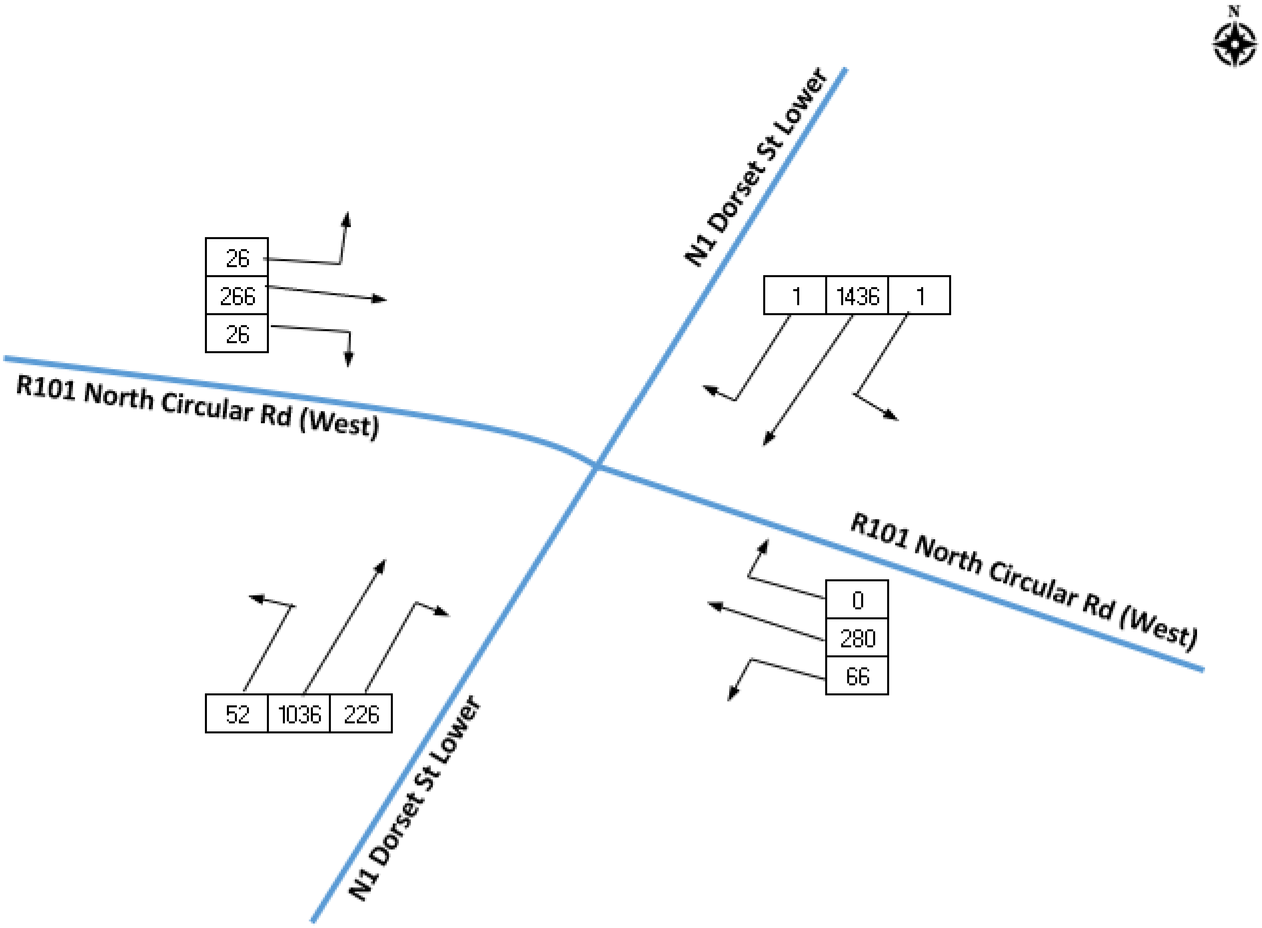


Figure 7.1: N1 Dorset Street Lower / R101 North Circular Road - AM 2018 Baseline Flows

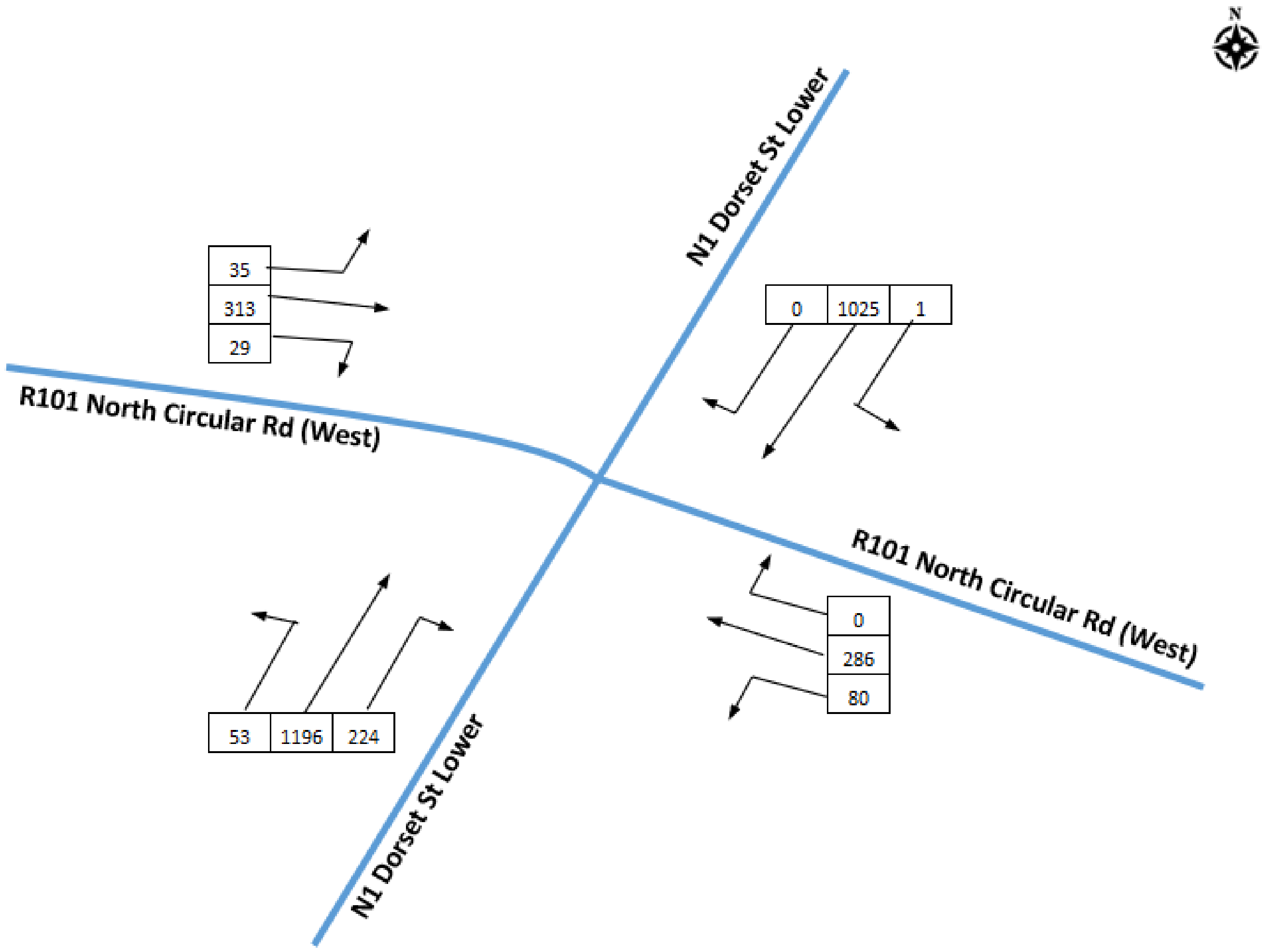


Figure 7.2: N1 Dorset Street Lower / R101 North Circular Road - PM 2018 Baseline Flows

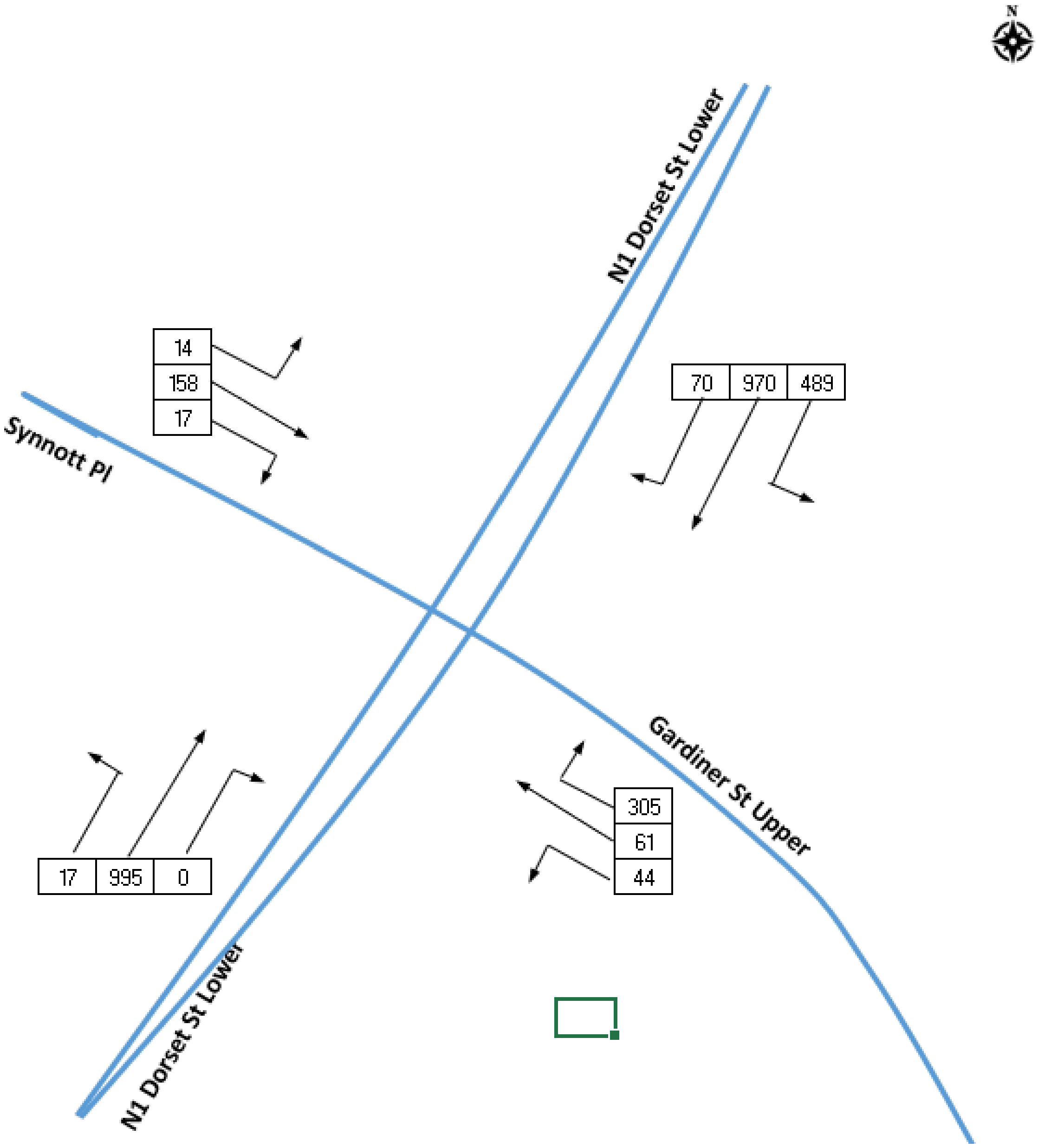


Figure 7.3: N1 Dorset Street Lower/ Synott Place / Gardiner Street Upper - AM 2018 Baseline Flows

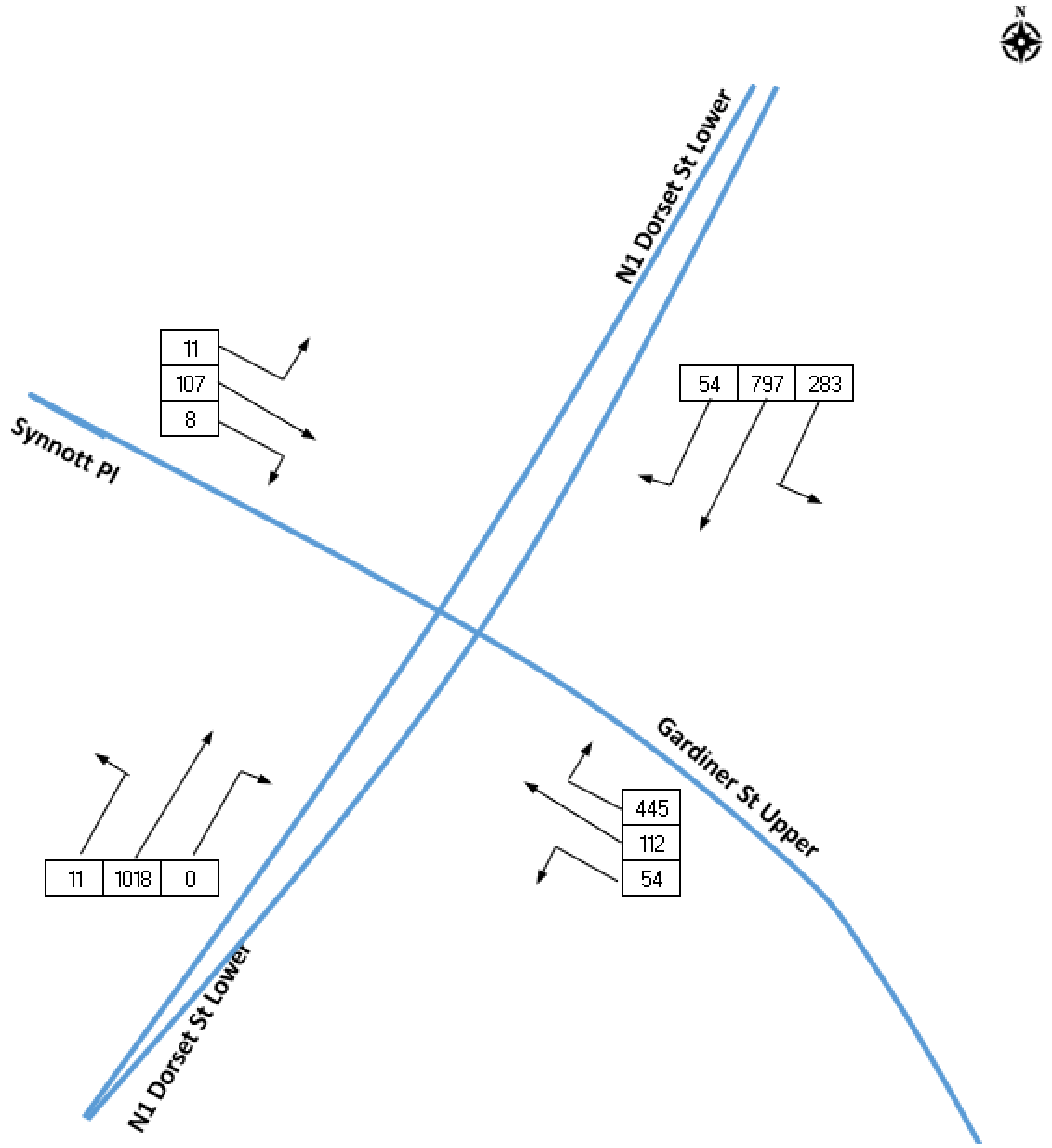


Figure 7.4: N1 Dorset Street Lower/ Synott Place / Gardiner Street Upper - PM 2018 Baseline Flows

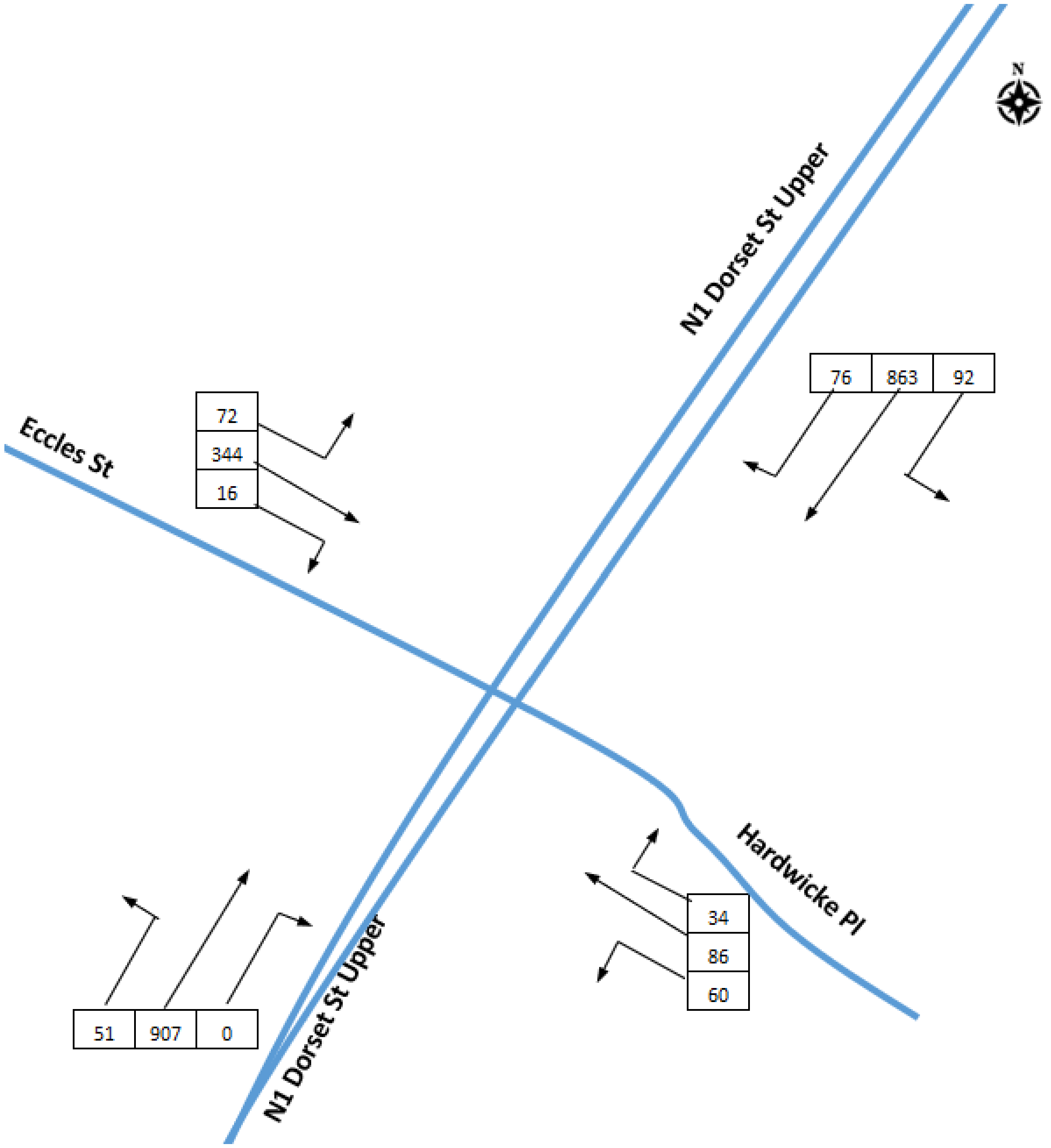


Figure 7.5: N1 Dorset Street Lower/ Eccles Street / Hardwicke Place - AM 2018 Baseline Flows

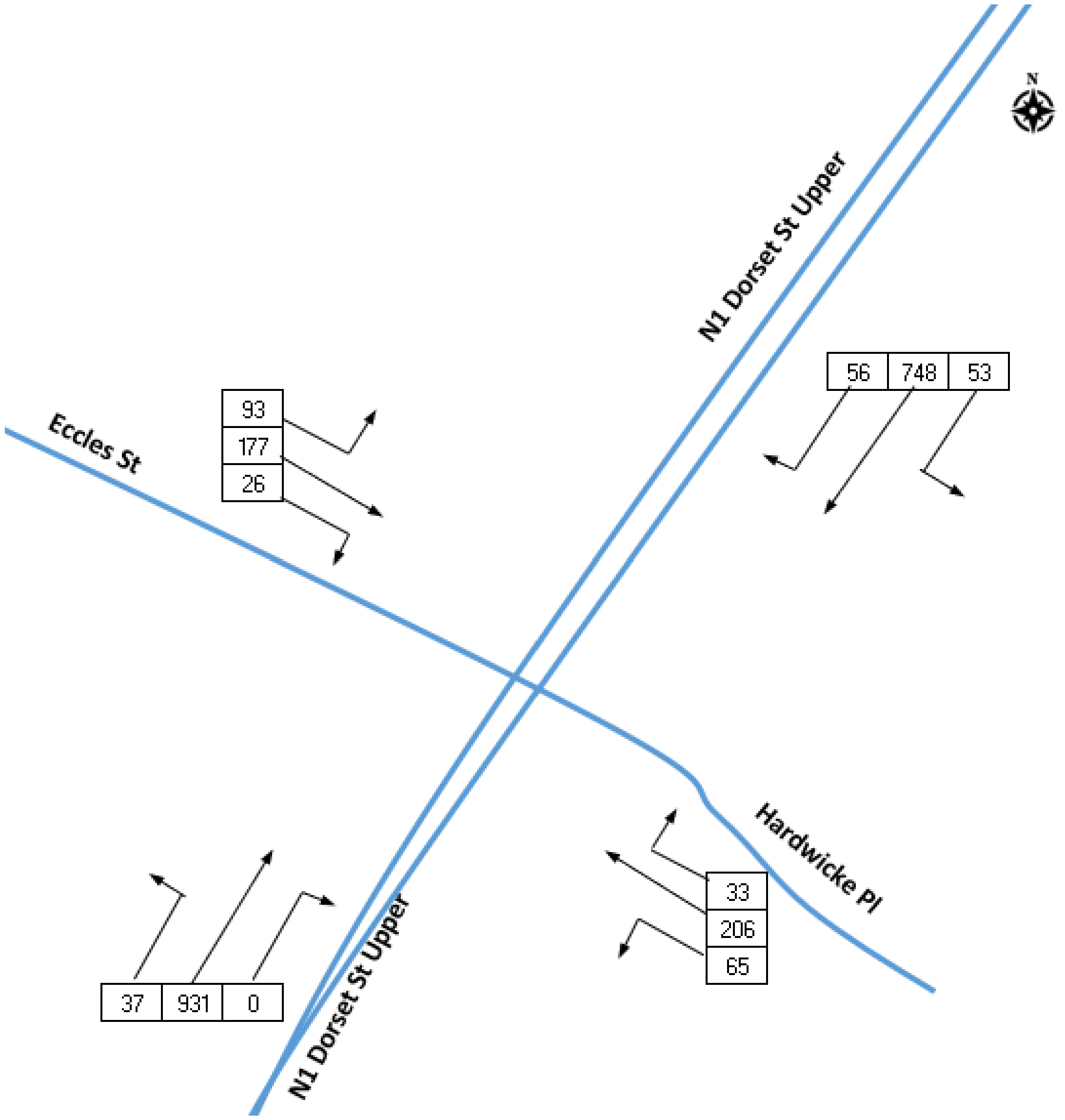


Figure 7.6: N1 Dorset Street Lower/ Eccles Street / Hardwicke Place - PM 2018 Baseline Flows

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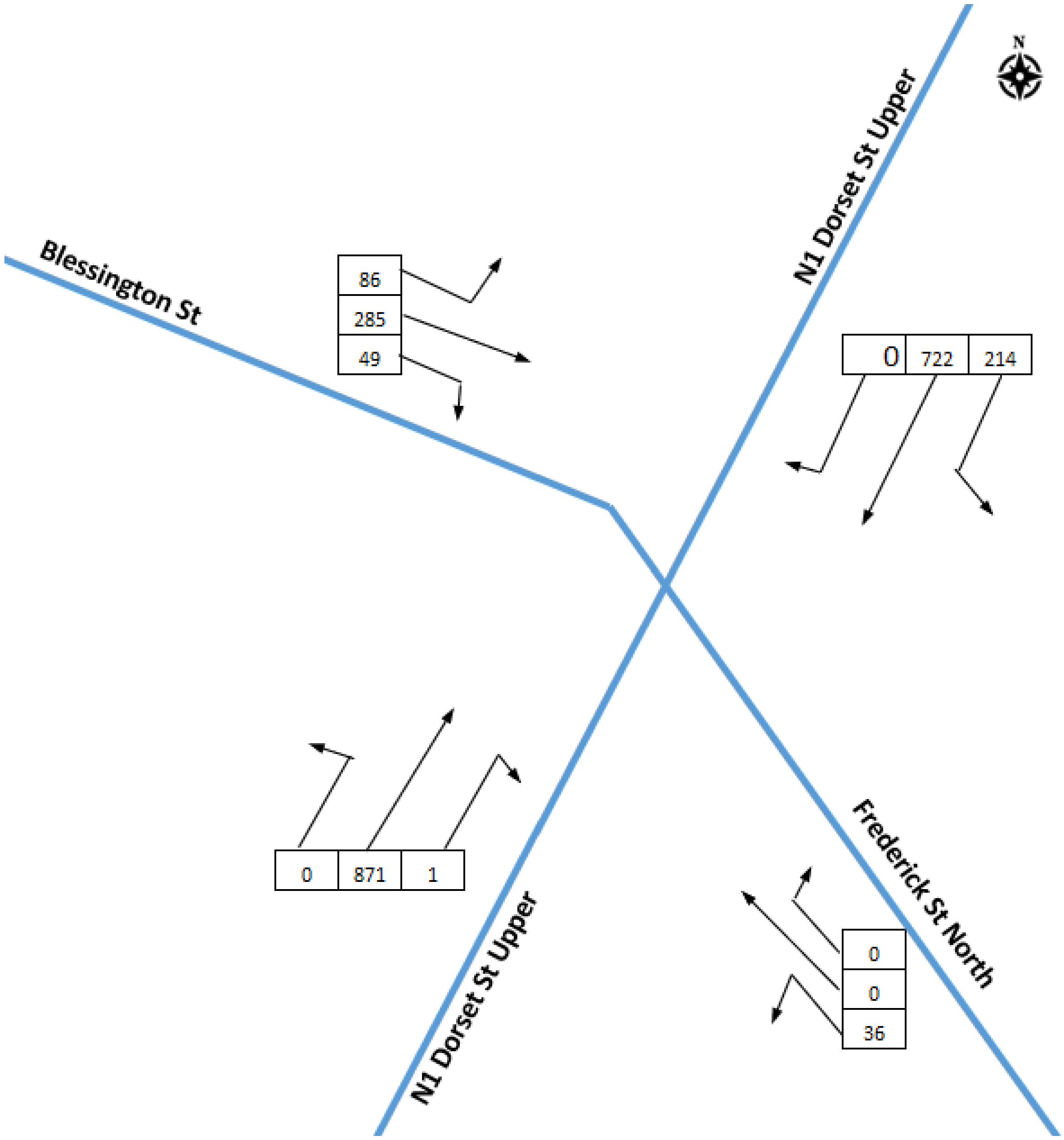


Figure 7.7: N1 Dorset Street Lower/ Blessington Street / Frederick Street North - AM 2018 Baseline Flows

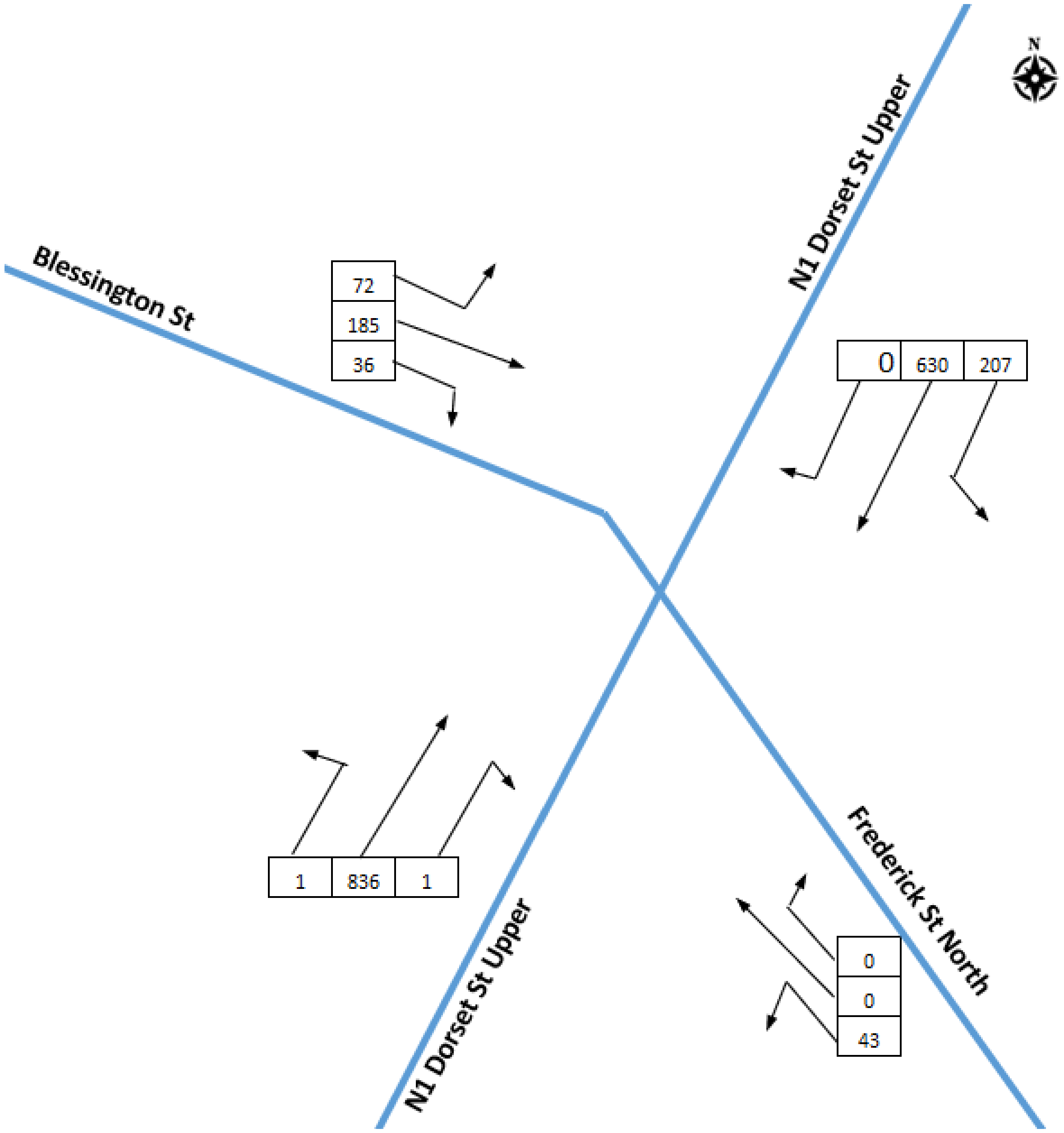


Figure 7.8: N1 Dorset Street Lower/ Blessington Street / Frederick Street North - PM 2018 Baseline Flows

Contents

1. Introduction

1.1 Background

Jacobs/IDOM has been commissioned to undertake the Environmental Impact Assessment Report (EIAR) in support of the proposed Dublin MetroLink project (hereafter referred to as the proposed Project). The EIAR is being prepared to assess the environmental impacts of the proposed Project, including in relation to traffic and transport.

This Traffic and Transportation Assessment (TTA) assesses the operational impacts associated with the proposed O'Connell Street Station on the Traffic and Transport network in the local area. TTA's have been prepared for each individual station as well as an overall TTA for the Project.

Jacobs/IDOM has also been commissioned to undertake a scheme traffic management plan (STMP). The STMP is a standalone report within the EIAR. The STMP assesses the impact of the construction of the MetroLink Project on all road users and proposes mitigation measures where appropriate.

A summary of the TTAs and STMP will be included within the Traffic and Transportation chapter of the EIAR.

1.2 Assessment Scenarios

In order to provide a rounded assessment of the proposed Project, its impacts have been reviewed for a range of future years, and in the context of two alternative future scenarios. The forecast years are 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). As outlined in Table 1.1, Scenario A includes the proposed Project and committed transport schemes only, while Scenario B includes a range of further planned schemes depending on the forecast year.

Table 1.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project.
Do Minimum Scenario	Committed transport schemes in the absence of the Project.
Do Something - Scenario A	Scenario with the Project and committed transport schemes only.
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for Opening year (2035) and planned schemes under the Transport Strategy for the GDA for the Design Year (2050) and the Forecast Year (2065).

Committed transport schemes in the Do Minimum scenario and in Scenario A, that have been progressed through planning and are either under construction or are programmed into the capital expenditure budget, include, but are not limited to:

- Luas Green Line Capacity Enhancement – Phase 1;
- BusConnects Dublin Area Bus Network Redesign; and

- BusConnects Fares and Ticketing.

Scenario B represents the likely future receiving environment and is based on the delivery of the schemes identified within the National Development Plan for 2035, and on the implementation of the NTA's Greater Dublin Area (GDA) Transport Strategy for 2050 and 2065. As such, this scenario considers the cumulative impacts of interactions between other projects that are most likely to impact on transport movements in the area. Schemes included in this scenario are, but are not limited to:

- Luas Green Line Capacity Enhancement - Phase 2;
- Luas Finglas;
- Luas Lucan;
- BusConnects Core Bus Corridors (planned 16 corridors); and
- DART+.

More information on each modelled scenario is available in the Transport Modelling Plan (Appendix A9.3).

1.3 Project Overview

The proposed Project will be a high-capacity, high frequency rail line running from Swords to Charlemont, linking Dublin Airport, Irish Rail, the Dublin Area Rapid Transit (DART), Dublin Bus and Luas services, improving integration across public transport network in the Greater Dublin Area (GDA).

As well as linking major transport hubs, the proposed Project will connect key destinations including Swords, Ballymun, the Mater Hospital, the Rotunda, Dublin City University and Trinity College with much of the 19-kilometre route running underground.

When operations commence, there will be trains every 3 minutes during peak periods. This can rise to a service every 90 seconds, with the system capable of carrying a peak line flow of 20,000 passengers per hour in each direction.

1.3.1 O'Connell Street Station

O'Connell Street Station is located on the site of the Dublin Central CP Ltd development known as Dublin Central Site 2. The site is bordered by O'Connell Street Upper to the east, Moore Lane to the west, and Henry Place to the south and Central Site 1 to the north, as shown in Figure 1.1.

The main pedestrian access to the station is located at No 44/45 O'Connell Steet with a second access to the station provided off Moore Lane. As this is a key Dublin City Centre location, there will be no alterations made to the existing networks, including public transport, road, pedestrian or cycling networks.

O'Connell Street Upper is also served by the Luas Green Line, facilitating interchange to access areas such as Grangegorman and Broombridge. The Luas Red Line serves Abbey Street, to the south-east of the proposed station, connecting to O'Connell Street. O'Connell Street is also served by multiple bus routes with multiple frequencies.

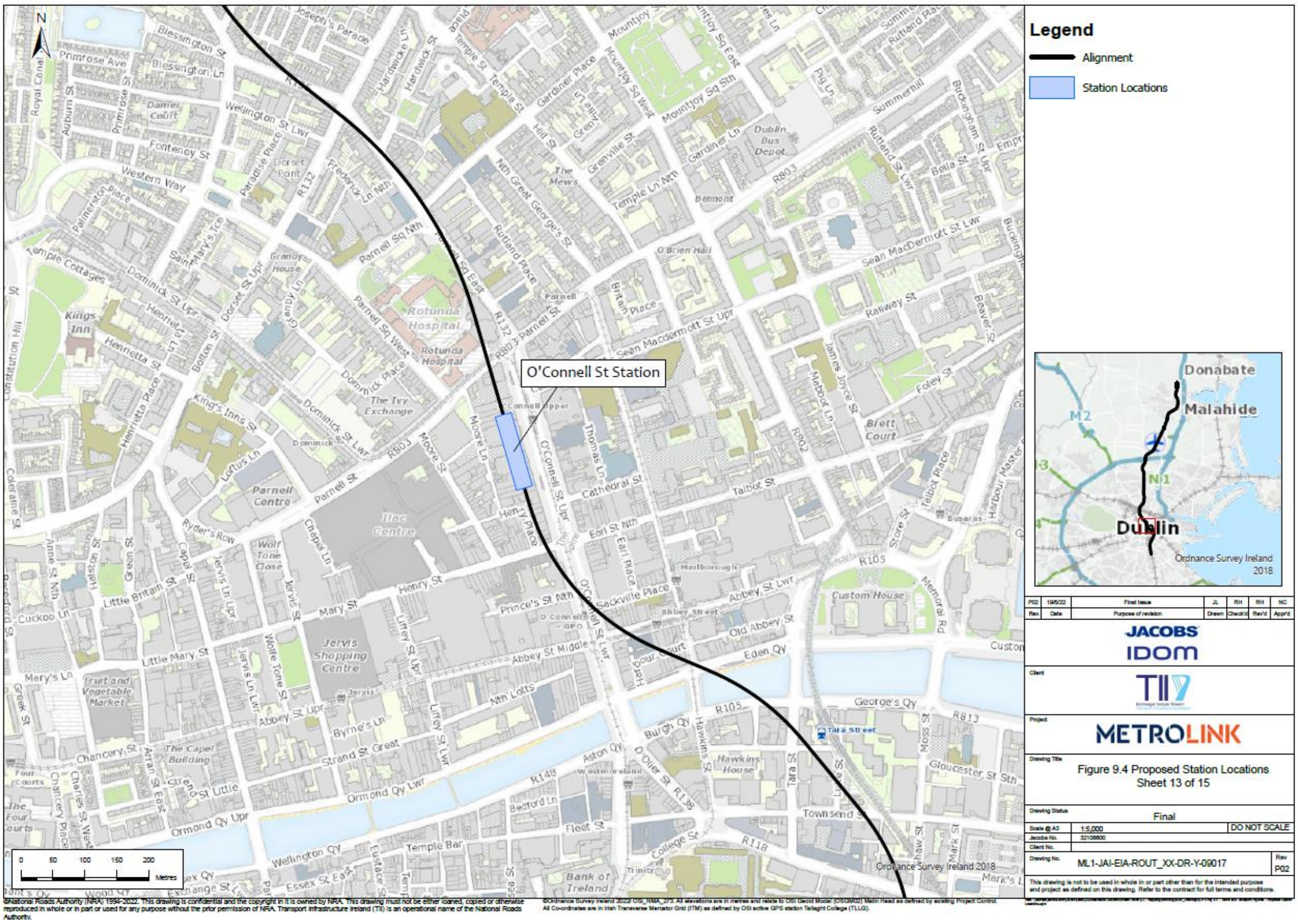


Figure 1.1: Proposed Station Location of O'Connell Street Station

2. Policy Context

Reference should be made to the Chapter 3 of the Overall Project TTA, and Planning Policy Report (ML1-JAI-PLD-ROUT_XX-RP-Y-00020) for further detail on the overall project in relation to key national and regional policies.

The overarching theme of national planning policy is the consolidation and sustainable use of land in urban areas, particularly urban environments well served by public transport

The National Spatial Strategy states that in order to promote sustainable development, it is essential to consolidate the physical growth of Dublin City. This should be supported by effective land use policies for the urban area which underpin increased investment in high quality public transport infrastructure. It outlines a number of requirements that are key to creating a compact and economically vibrant city including;

- The effective integration of land use and transportation policy: and
- Facilitating the movement of people and goods through an effective public transport system.

The Regional Planning Guidelines promote the consolidation of development within the metropolitan area, and the achievement of sustainable densities in tandem with a much-enhanced multi-modal transport system.

The Transport Strategy for the Greater Dublin Area 2016-2035 and the Regional Planning Guidelines are required under legislation to be consistent with each other, and therefore the purpose of the Strategy is "to contribute to the economic, social and cultural progress of the Greater Dublin Area by providing for the efficient, effective and sustainable movement of people and goods." The Strategy sets out the necessary transport provision for the period up to 2035, to achieve this objective for the region, including the provision of the Metro.

Under the Greater Dublin Area Cycle Network Plan, O'Connell Street Upper and Parnell Street form part of a primary cycle route along the eastern side of the city centre. O'Connell Street Upper forms part of the C1 north south central spine, while cycle route 4 starts on Parnell Street north west ward.

Under the BusConnects Draft Network Redesign, O'Connell Street is proposed to be served by three high-frequency cross-city spines, and two frequent radial routes. The E Spine would run every 5 minutes all day from Charlestown/Ballymun in the north to Dún Laoghaire/Bray in the south; the F Spine would run every 8 minutes all day from Charlestown/Finglas in the north to Kimmage/Greenhills in the south; and the A Spine would run all day every 3-4 minutes from Swords/Whitehall (Drumcondra) in the north to Rathmines/Rathgar/Terenure in the south. Radial routes 4 passes through Parnell, and radial routes 16 and 23 also pass through O'Connell Street.

2.1 Local Policy Context

The overarching theme of the local policy regarding movement is "helping to build an integrated transport network and encouraging the provision of greater choice of public transport and active travel".

Based on review of the Dublin City Council Development Plan (2016 – 2022) it is the Policy of Dublin City Council:

SC19: To promote the development of a network of active, attractive and safe streets and public spaces which are memorable, and include, where appropriate, seating, and which encourage walking as the preferred means of movement between buildings and activities in the city. In the case of pedestrian movement within major developments, the creation of a public street is preferable to an enclosed arcade or other passageway.

SC20: To promote the development of high-quality streets and public spaces which are accessible and inclusive, and which deliver vibrant, attractive, accessible and safe places and meet the needs of the city's diverse communities.

MT2: Whilst having regard to the necessity for private car usage and the economic benefit to the city centre retail core as well as the city and national economy, to continue to promote modal shift from private car use towards increased use of more sustainable forms of transport such as cycling, walking and public transport, and to co-operate with the NTA, Transport Infrastructure Ireland (TII) and other transport agencies in progressing an integrated set of transport objectives. Initiatives contained in the government's 'Smarter Travel' document and in the NTA's draft transport strategy are key elements of this approach.

MT3: To support and facilitate the development of an integrated public transport network with efficient interchange between transport modes, serving the existing and future needs of the city in association with relevant transport providers, agencies and stakeholders.

MT4: To promote and facilitate the provision of Metro, all heavy elements of the DART Expansion Programme including DART Underground (rail interconnector), the electrification of existing lines, the expansion of Luas, and improvements to the bus network in order to achieve strategic transport objectives.

MT5: To work with the relevant transport providers, agencies and stakeholders to facilitate the integration of active travel (walking, cycling etc.) with public transport, thereby making it easier for people to access and use the public transport system.

MT6: (i) To work with Iarnród Eireann, the NTA, Transport Infrastructure Ireland (TII) and other operators to progress a coordinated approach to improving the rail network, integrated with other public transport modes to ensure maximum public benefit and promoting sustainable transport and improved connectivity.

(ii) To facilitate the needs of freight transport in accordance with the National Transport Authority's Transport Strategy for the Greater Dublin Area 2016 – 2035.

MT7: To improve the city's environment for walking and cycling through the implementation of improvements to thoroughfares and junctions and also through the development of new and safe routes, including the provision of foot and cycle bridges. Routes within the network will be planned in conjunction with green infrastructure objectives and on foot of (inter alia) the NTA's Cycle Network Plan for the Greater Dublin Area, and the National Cycle Manual, having regard to policy GI5 and objective GIO18.

MT8: To work with, and actively promote, initiatives by relevant agencies and stakeholders such as An Taisce's 'Green Schools' initiative and the NTAs Smarter Travel Unit, to promote active travel in schools and communities, recognising the health and social benefits of walking and cycling as well as the environmental benefits.

MT9: To promote Bike and Ride at public transport hubs by providing secure, dry, bike parking facilities.

MT10: To provide 30kph speed limits and traffic calmed areas at appropriate locations throughout the city and subject to stakeholder consultation.

MT11: To continue to promote improved permeability for both cyclists and pedestrians in existing urban areas in line with the National Transport Authority's document 'Permeability – a best practice guide'. Also, to carry out a permeability and accessibility study of appropriate areas in the vicinity of all Luas, rail and BRT routes and stations, in co-operation with Transport Infrastructure Ireland and the National Transport Authority.

The Dublin City Development Plan and Dublin City Centre Transport Study outline strategic pedestrian routes within the City Centre. These routes, which include both O'Connell Street and Parnell Street, are envisaged to become streets where pedestrian movement and activity are prioritised.

The Heavy Good Vehicles (HGV) Management Strategy created restrictions on the movement of HGV's with 5 or more axles within the city centre. During the hours of 07.00 – 19.00, seven days a week, HGV's with 5 or more axles are not allowed to enter the restricted zone without having a permit. HGV's with 4 axles or less can enter the restricted zone at any time, but must follow specific designated routes, Northern Circular Road, Summerhill, Parnell Street, Capel Street, Bolton Street, and Dorset Street Upper all form part of these designated routes.

The Dublin City Centre cycle parking strategy recommends the development of new and the expansion of existing on-street sites in order of ranking and targeting specific locations based on "real time" demand. It further recommends the expansion of sites with latent capacity as demand increases.

2.2 Draft Dublin City Council Development Plan 2022-2028

Building on the objectives of the Dublin City Council Development Plan 2016-2022, the Draft Dublin City Council Development Plan 2022-2028 recognises the opportunities presented by MetroLink to achieve effective integration of land-use and transportation in the area.

SMT20: Key Sustainable Transport Projects:

- To support the expeditious delivery of key sustainable transport projects including MetroLink, BusConnects, DART+ and Luas Expansion Programme so as to provide an integrated public transport network with efficient interchange between transport modes, serving the existing and future needs of the city and region.

In addition, the Draft Plan highlights the role the proposed Project will play in delivering opportunities for developing the public ream around proposed stations.

3. Baseline Conditions

This section describes the existing receiving environment within the vicinity of the O'Connell Street Station and the wider environs, and identifies the future receiving environment for all modes of transport if conditions are planned to change in advance of the construction of the Project, such as the delivery of other proposed infrastructure projects.

3.1 Dublin Central Proposal

The 'Dublin Central' masterplan proposals include a mixed-use development with two new public squares, new pedestrian routes and the restoration of surrounding laneways. The masterplan area has frontage on O'Connell Street Upper, is bound by Parnell Street to the north, Moore Street to the west and Henry Street to the south. The proposals also include 32 car parking spaces, 364 cycle parking spaces, and pedestrianisation on Moore Lane and Henry Place after 11am.

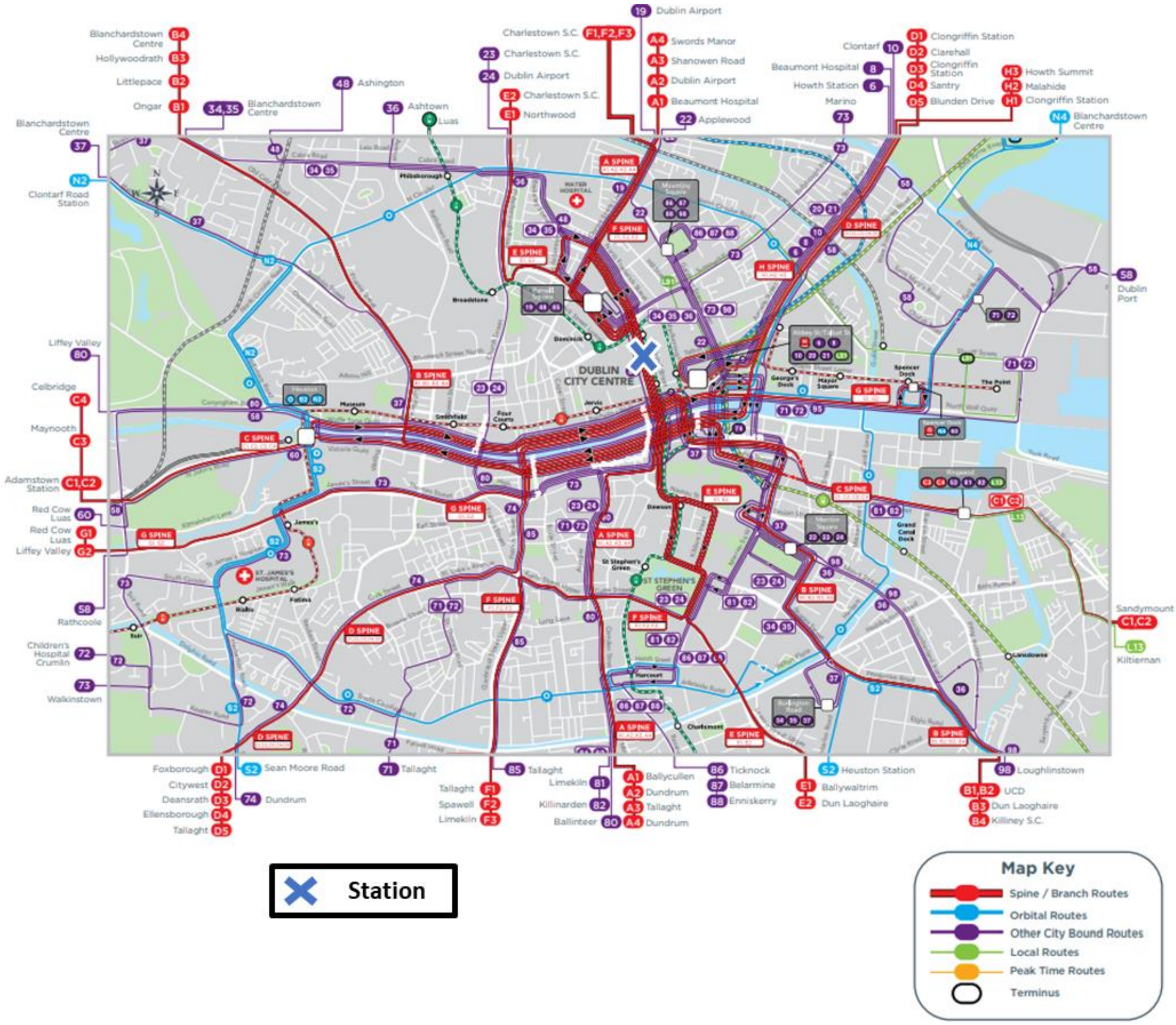
Vehicular access to the 32-space basement car park will be by ramp from Moore Lane, while access to cycle parking will also be from Moore Lane.

Allowance has been made for the possibility that the Dublin Central GP may obtain planning permission for their mixed-use development on Site 2 in advance of the proposed Project. To provide for this scenario TII has worked closely with Dublin Central GP Ltd to ensure that the design for that the Dublin Central proposal allows for the construction of an independent support structure to enable the O'Connell Street station box construction and fit out to be carried out during or after the Dublin Central GP works have been completed.

3.2 Existing Public Transport Network

Figure 3.1 shows the existing bus network around O'Connell Street Station. The area around O'Connell Street Station is served by number of high frequency bus services, many of which serve bus stops located in close proximity to the proposed station location. The O'Connell station is also in close proximity to Luas stops for the Green Line (O'Connell GPO and O'Connell Upper) and Red Line (Abbey Street stop).

Figure 3.2 shows all the public transport stations within a 600m radius of the proposed O'Connell Street Station. The proposed station is in close proximity to other public transport stations facilitating easy transfer between modes. Some of the bus routes serving this specific location are 4 (Monkstown Avenue to Harristown); 7 (Mountjoy Square Park to Bride's Glen); 16 (Kingston Estate to Dublin Airport); 120 (Rathbourne Avenue to Marlborough Street); 140 (Saint Margaret's Road to Upper Rathmines Road); and 155 (Ballymun to Bray).



(Base Source: www.busconnects.ie)

Figure 3.1: Existing bus network around O'Connell Street Station

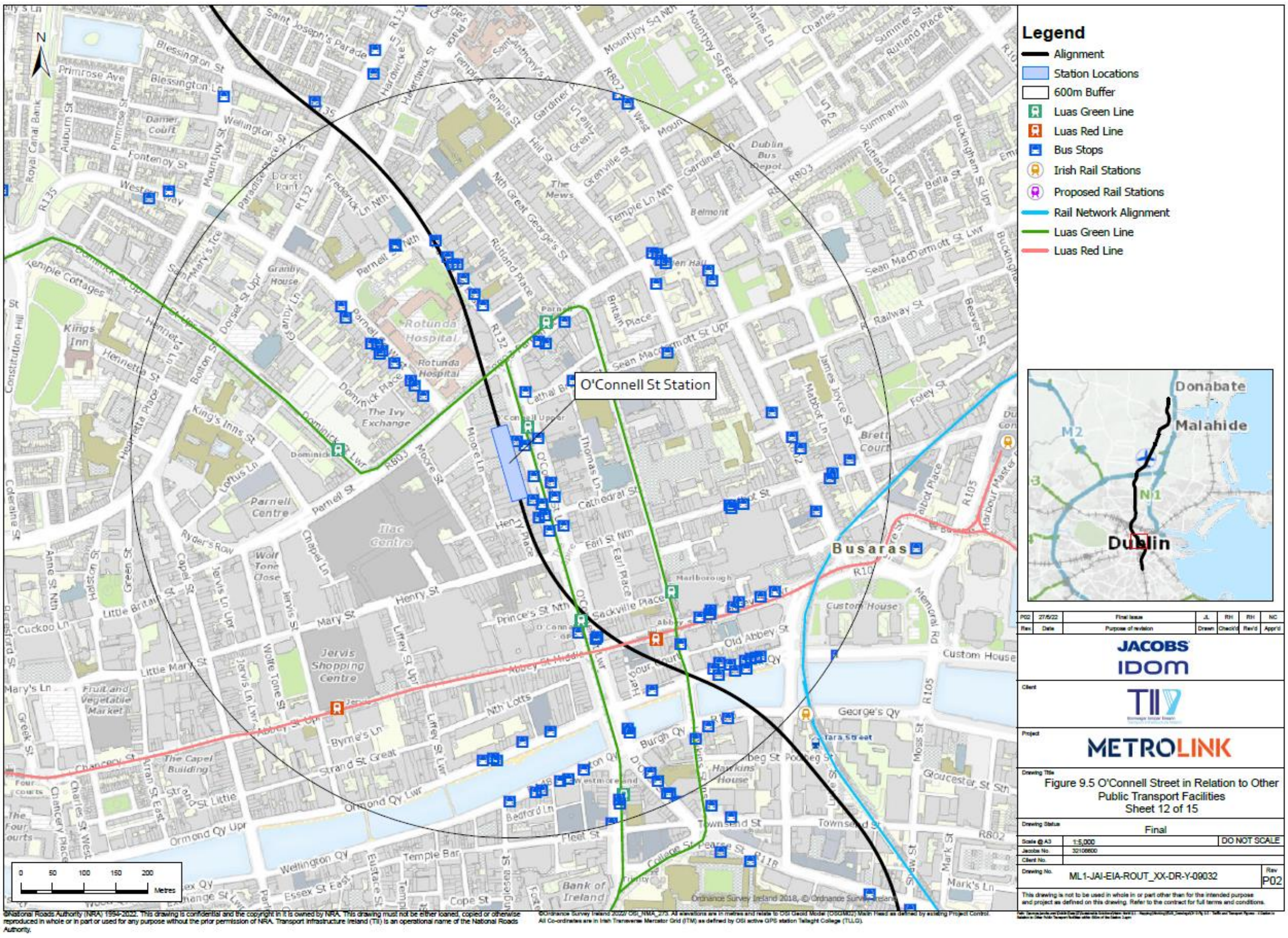
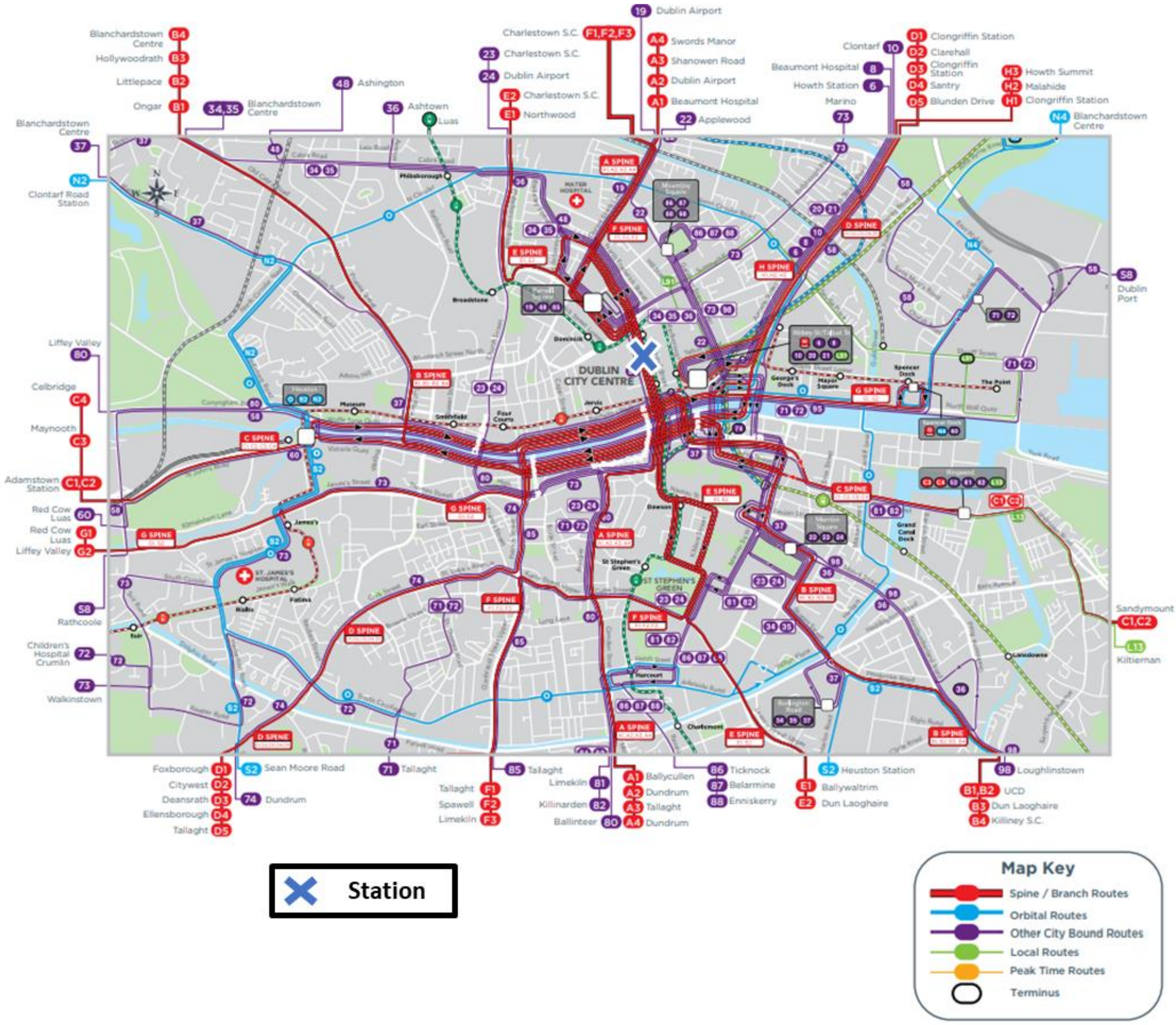


Figure 3.2: Transport facilities within 600m buffer from O’Connell Street Station

3.3 Future Receiving Environment – Public Transport Network

When the proposed Project is in place at O’Connell Street there will be no changes made to the existing road and public transport layout.

As part of the Bus Network Redesign proposals, O’Connell Street will be served by multiple Spine routes and Other City Bound Routes, as shown in Figure 3.3.



(Base Source: www.busconnects.ie)

Figure 3.3: Proposed Bus Network Redesign around O’Connell Street Station

3.4 Existing Road Network

Figure 3.4 illustrates the road network surrounding O’Connell Street. As part of the regional network, the vicinity of O’Connell Street Station comprises the R803 running in a West-Easterly direction along Parnell Street and continues as the R132 on Parnell Square West.

O’Connell Street is a two-way dual carriageway at the east of the proposed location. In its most proximate section to the station, the O’Connell Street is 22.5m wide (including Luas tracks) and has one traffic lane and one bus lane in both bounds.

Abbey Street is a single carriageway, mainly dedicated to the Luas Red Line tracks in both directions. To the west of the station, Abbey Street allows only westbound movements for traffic and provides for one traffic lane. To the east of the station, Abbey Street allows for eastbound movements for traffic and provides for one traffic lane and one bus lane.

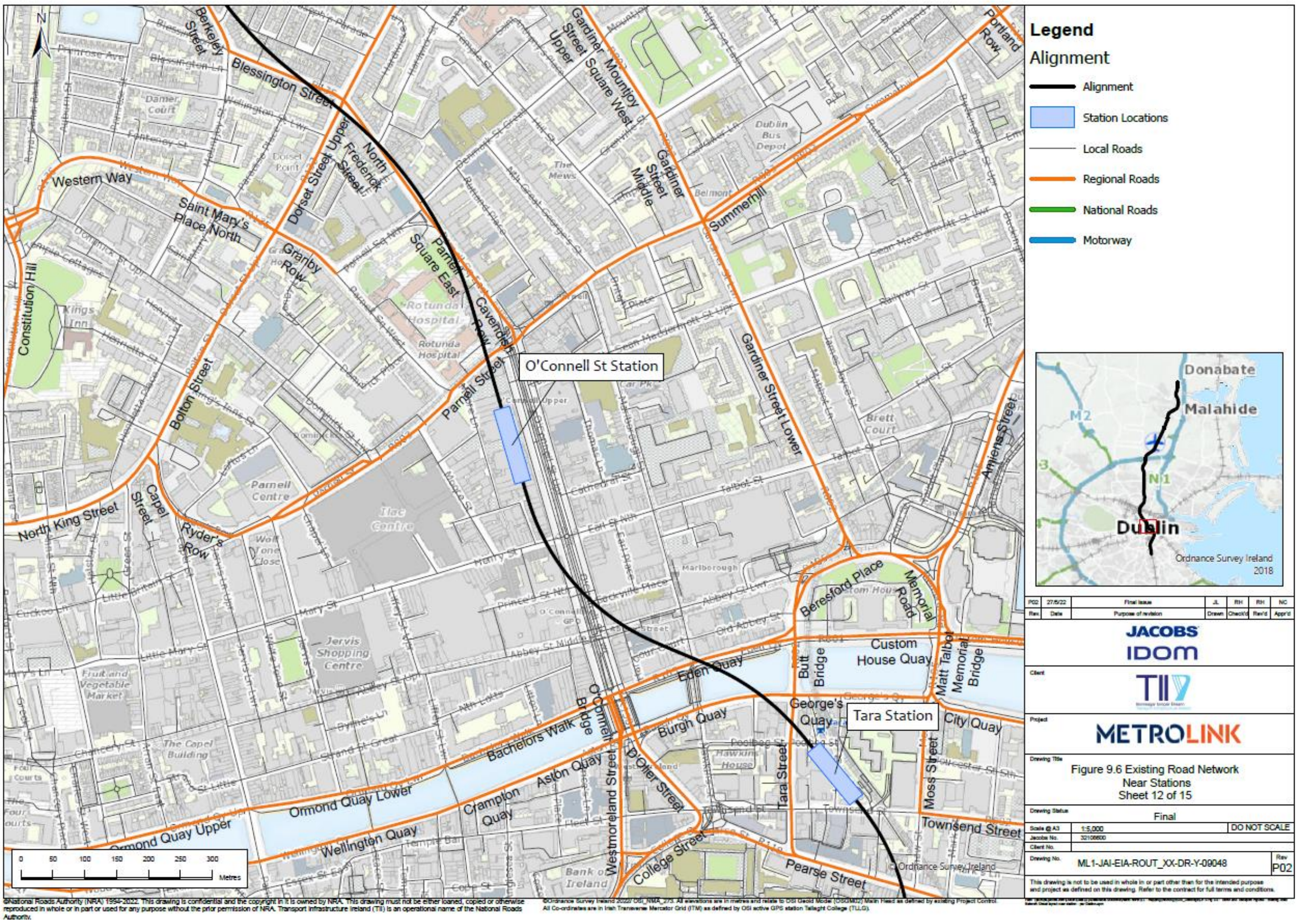


Figure 3.4: Street layout near O'Connell Street Station

3.4.1 Junction Turning Count Locations

The Data Collection Report (ML1-JAI-TRA-ROUT_XX-RP-Y-00023) details the methodology and specification of traffic surveys undertaken for the proposed Project. The survey locations relevant to O'Connell Street Station are shown in Table 3.1. Vehicle classifications used for the survey were Car, LGV, OGV1, OGV2, PSV, Motorcycle and Pedal Cycle. PCUs values were also reported using appropriate conversion factors for each vehicle classification. The resulting PCU values from the survey results have been used for the LinSig modelling.

Demand flows were obtained from the turning counts and queue data from either observation from online traffic flow data sources or queue count surveys. Demand data has been used in all the assessment work undertaken.

Table 3.1 – Survey Locations Around O'Connell Street Station

Junction	Type of Survey
O'Connell Street/Parnell Street	Classified junction turning counts (CJTC)
Parnell Street/Capel Street	CJTC
Parnell Street /Marlborough Street	CJTC

Junction	Type of Survey
Parnell Street/Gardiner Street Lower/Summerhill	CJTC
Gardiner Row/ Parnell Square East/Frederick St North	CJTC

3.4.2 Forecast Traffic Growth

Forecast traffic growth rates have been obtained from the Eastern Regional Model (ERM) for future years 2035, 2050 and 2065, for the appropriate scenario.

3.5 Future Receiving Environment – Road Network

As part of the Dublin Central proposals, Moore Lane will be pedestrianised after 11am. Subject to the approval of Dublin City Council, it is proposed to reorder the existing streets:

- O'Rahilly Parade: One-way eastbound at all times with loading bay on south side;
- Moore Lane (Parnell Street – O'Rahilly Parade): One way northbound at all times with loading bay on east sides;
- Moore Lane (O'Rahilly Parade – Henry Place): Two-way as existing 06:00-11:00 with pedestrian zone after 11:00; and,
- Henry Place: Two-way as existing 06:00-11:00 with pedestrian zone after 11:00.

3.6 Existing Pedestrian Network

Under DCC's pedestrian hierarchy, O'Connell Street is designated as a 'Civic Spine and Liffey Corridor'. Parnell Street and Frederick Street North are designated as 'Secondary Streets', whilst Henry Street to the south of the proposed station is fully pedestrianized and considered a 'Primary Street'.

The external footway network is well established, with footways provided alongside principal roads. Pedestrian crossing facilities are provided at signalised junctions on O'Connell Street.

East of O'Connell street, the footways are approximately 5.1m on Parnell Street, with pedestrian crossings that include tactile paving and dropped kerbs.

3.6.1 Pedestrian Link Counts

The Data Collection Report (ML1-JAI-TRA-ROUT_XX-RP-Y-00023) details the locations around O'Connell Street Station where pedestrian surveys were undertaken.

3.6.2 Baseline Pedestrian Accessibility Review

A baseline accessibility assessment has been undertaken to establish existing walking provision relevant to the proposed O'Connell Street Station. Catchment maps prepared for the accessibility analysis for walking are based in two criteria, the average speed for each mode and the existing road network. Therefore, maps do not reflect existing access restrictions for private roads and motorised roads.

Figure 3.5 illustrates the 5 minutes, 10 minutes and 15 minutes pedestrian walking isochrones for the proposed O'Connell Street Station. Table 3.2 lists local amenities within the 5min walking, 10min walking and 15min walking from the O'Connell Street Station.

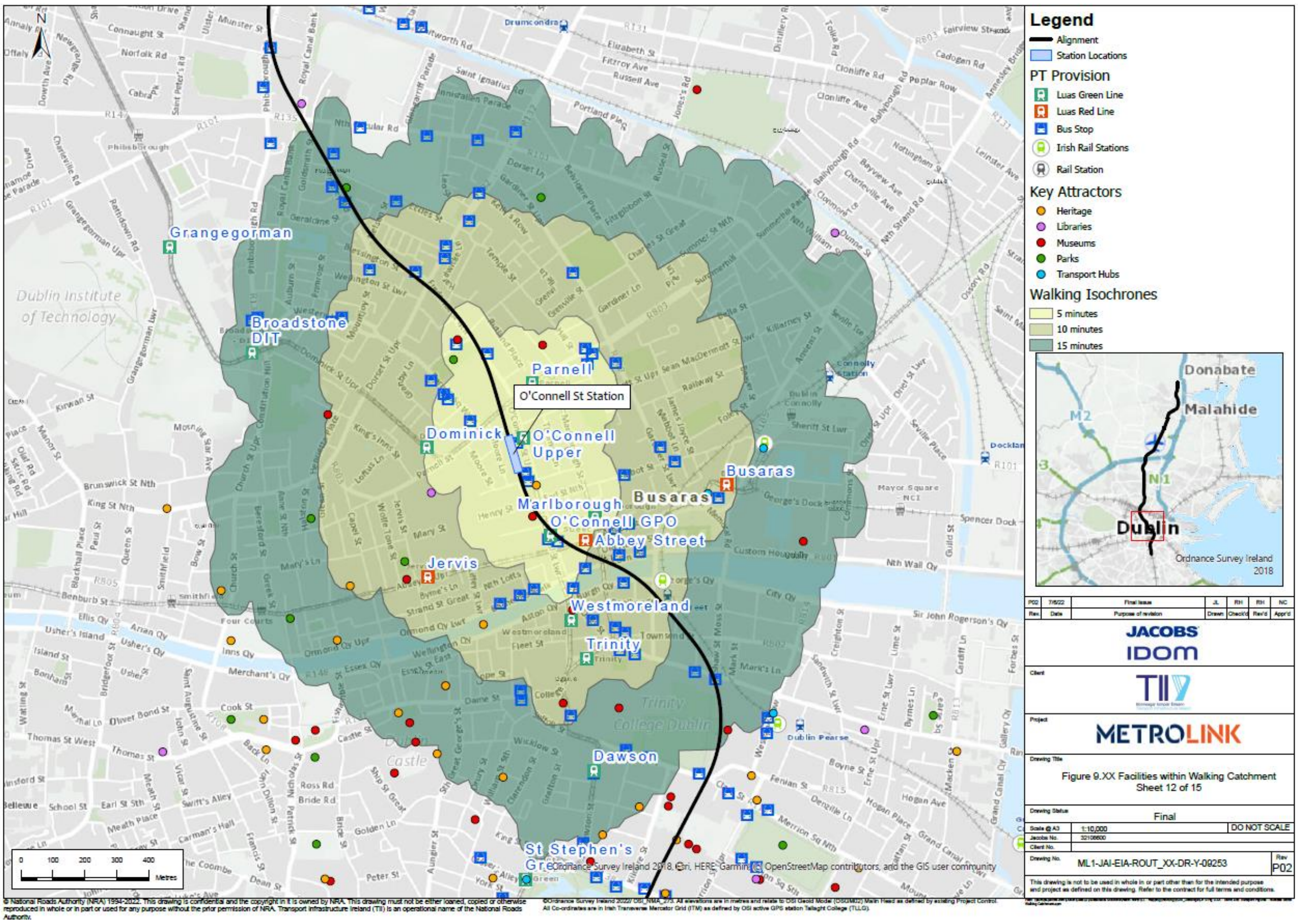


Figure 3.5: Pedestrian Walking Isochrones for Proposed O'Connell Street Station

Table 3.2 – Local facilities and amenities within Walking Catchment Area

Facilities within 5min walking	Facilities within 10min walking	Facilities within 15min walking
Various services, supermarkets, hotels, cafes and restaurants	Dublin Institute of Technology (DIT) Mountjoy Square & Bolton Street	Blessington Street Park (Phibsborough)
General Post Office	Mountjoy Square Park	International Financial Services Centre (IFSC)
Henry Street shopping area	Temple Street Childrens Hospital	Custom House Quay (CHQ)
Dublin Corporation Central Library	Cineworld Dublin and Screen Cinema	Connolly train station
Moore St Shopping Mall	Jervis Shopping Centre	Trinity College and College Park
Rotunda Hospital	The Custom House	Temple Bar
Garden of Remembrance	Abbey Theatre	City hall
Temple Hall	Tara train station	Dublin Castle

Facilities within 5min walking	Facilities within 10min walking	Facilities within 15min walking
Savoy Cinema and Abbey Theatre	Busaras Central Station	Grafton Street
Department of Education and Skills	Temple Bar	Mater Hospital
Ilac Shopping Centre	Trinity College Sports Centre	

A pedestrian comfort assessment has been undertaken to assess impact of the baseline volume of pedestrians on the network surrounding O'Connell Street Station, as shown in Figure 3.6.

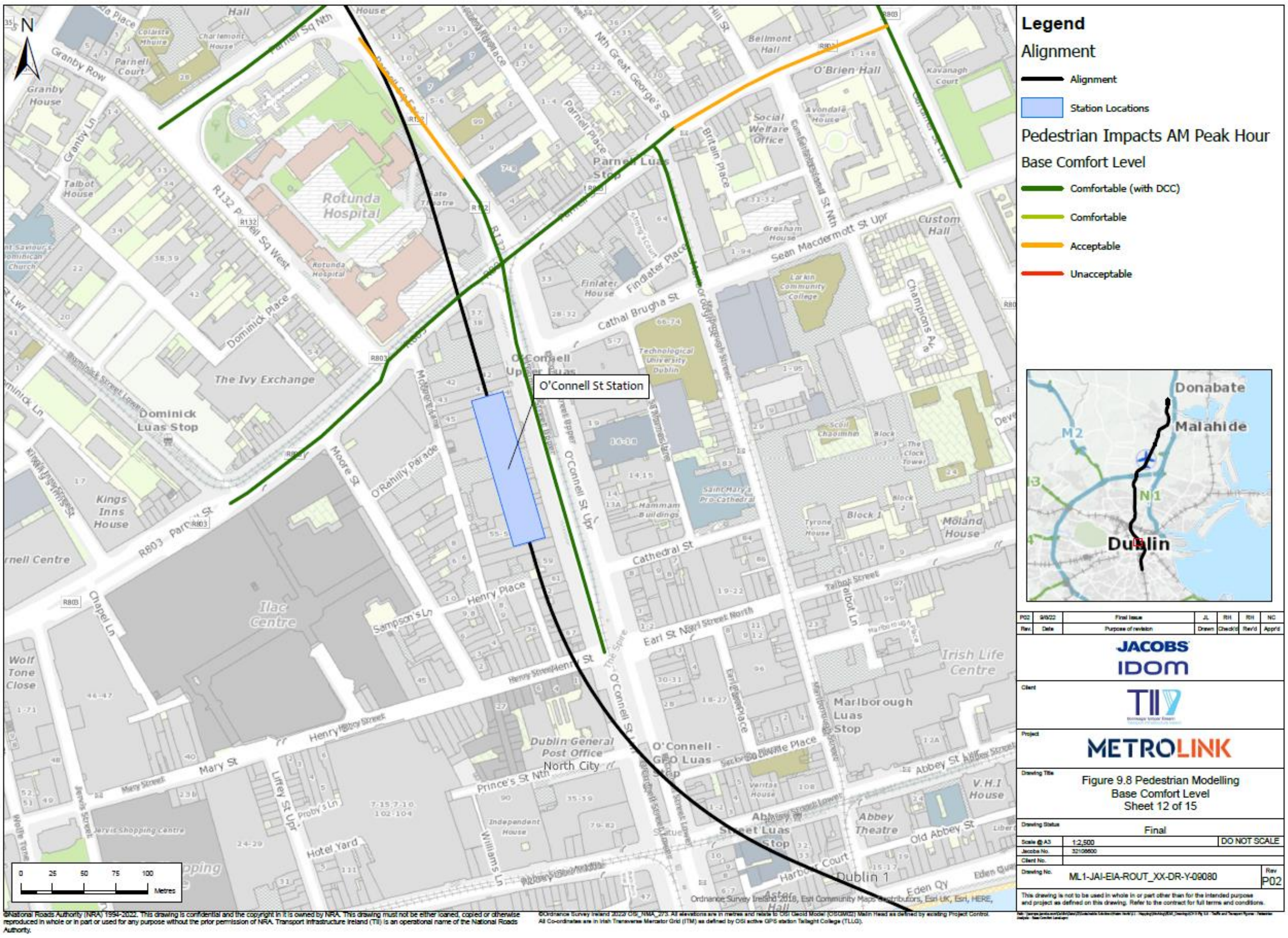


Figure 3.6: Pedestrian Comfort Assessment at O'Connell Street Station- Baseline

3.7 Future Receiving Environment – Pedestrian Network

The proposed street level layout will have no impact on the current pedestrian layout on O'Connell Street, with a pedestrian connection to Moore Lane where there will be an alternative station access.

A range of potential changes to the street level layout are however proposed as part of Hammerson Ireland's Dublin Central development, which envisages a new East-West pedestrianised connection from O'Connell Street to Moore Lane and through to Moore Street and a new North-South connection from the junction of Sampsons Lane and Moore Lane through to Henry Street.

The Project design is compatible with these proposals, and its impact on the performance of the local street network has been considered with and without the Dublin Central development.

3.8 Existing Cycle Network

Figure 3.7 illustrates O'Connell Street Station within the GDA Cycle Network. O'Connell Street is a Primary route within the network, with Cathal Brugha Street serving as a Secondary route.

A shared cycle lane/bus lane is provided on both sides of the carriageway on O'Connell Street. The cycle lane is approximately 1.2m wide, however the total shared lane is approximately 4m wide. A cycle lane is provided for on both sides of Gardiner Street Lower Monday to Saturday between Parnell Street and Beresford Place, and is approximately 1.3m wide. The eastern side cycle lane is operational between 7am and 7 pm. However, on the western side of the street the provision of the cycle lane is not continuous, with parking provision in between. The cycle lane on this side of the street is only in force between 4pm and 7pm.

A cycle lane is provided for on both sides of Gardiner Street Upper, Monday to Saturday between 7am and 7pm.

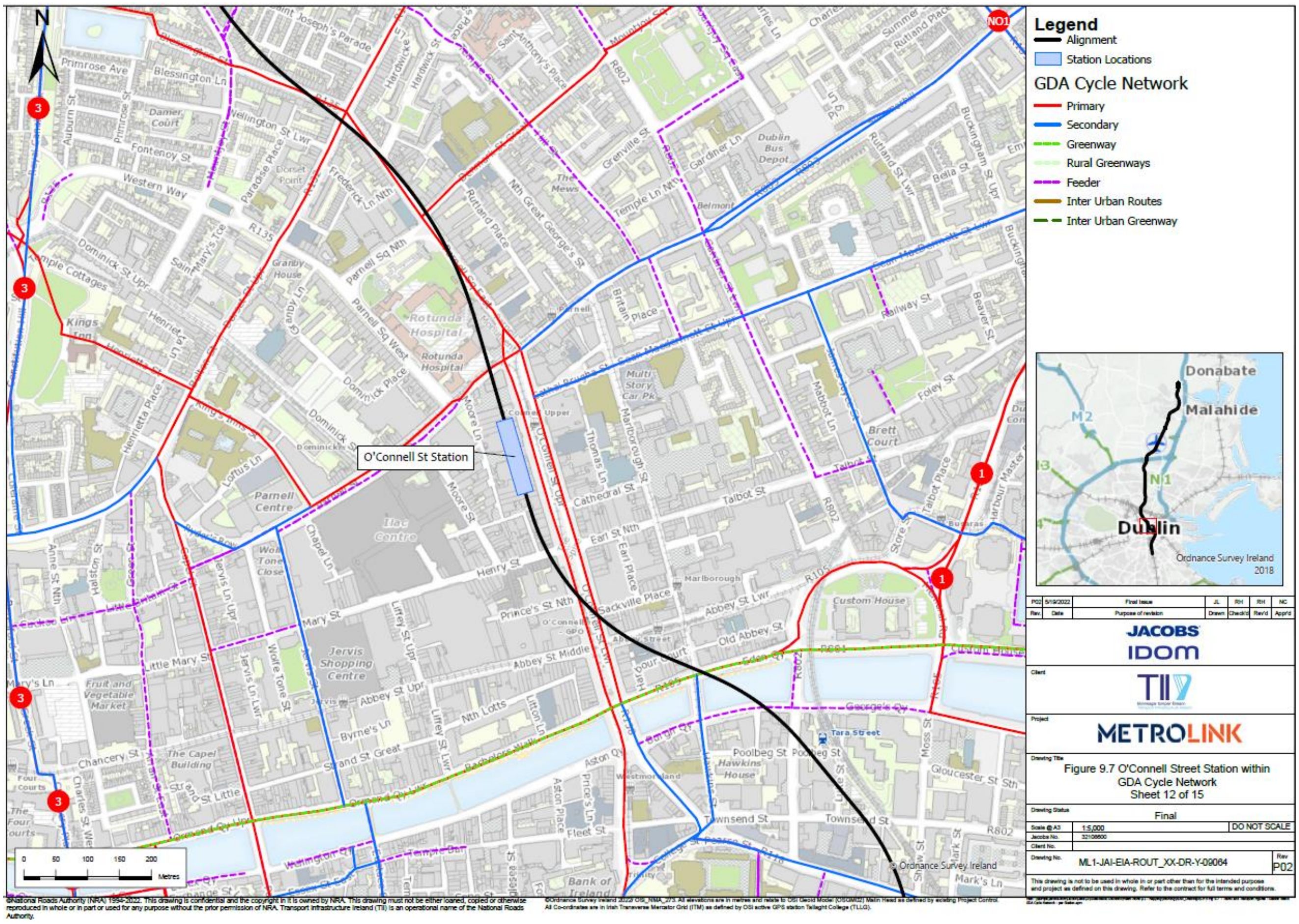


Figure 3.7: Proposed O'Connell Street Station Location Within GDA Cycle Network

3.8.1 Baseline Cycle Accessibility Review

A baseline accessibility assessment has been undertaken to establish existing cycling provision relevant to the proposed O'Connell Street Station. Catchment maps prepared for the accessibility analysis for cycling are based in two criteria, the average speed for each mode and the existing road network. Therefore, maps do not reflect existing access restrictions for private roads and motorised roads.

There are 10 DublinBikes bike stations in the area with an offering of 238 docking spaces. DCC also has a total of 397 Sheffield bike stands within the area.

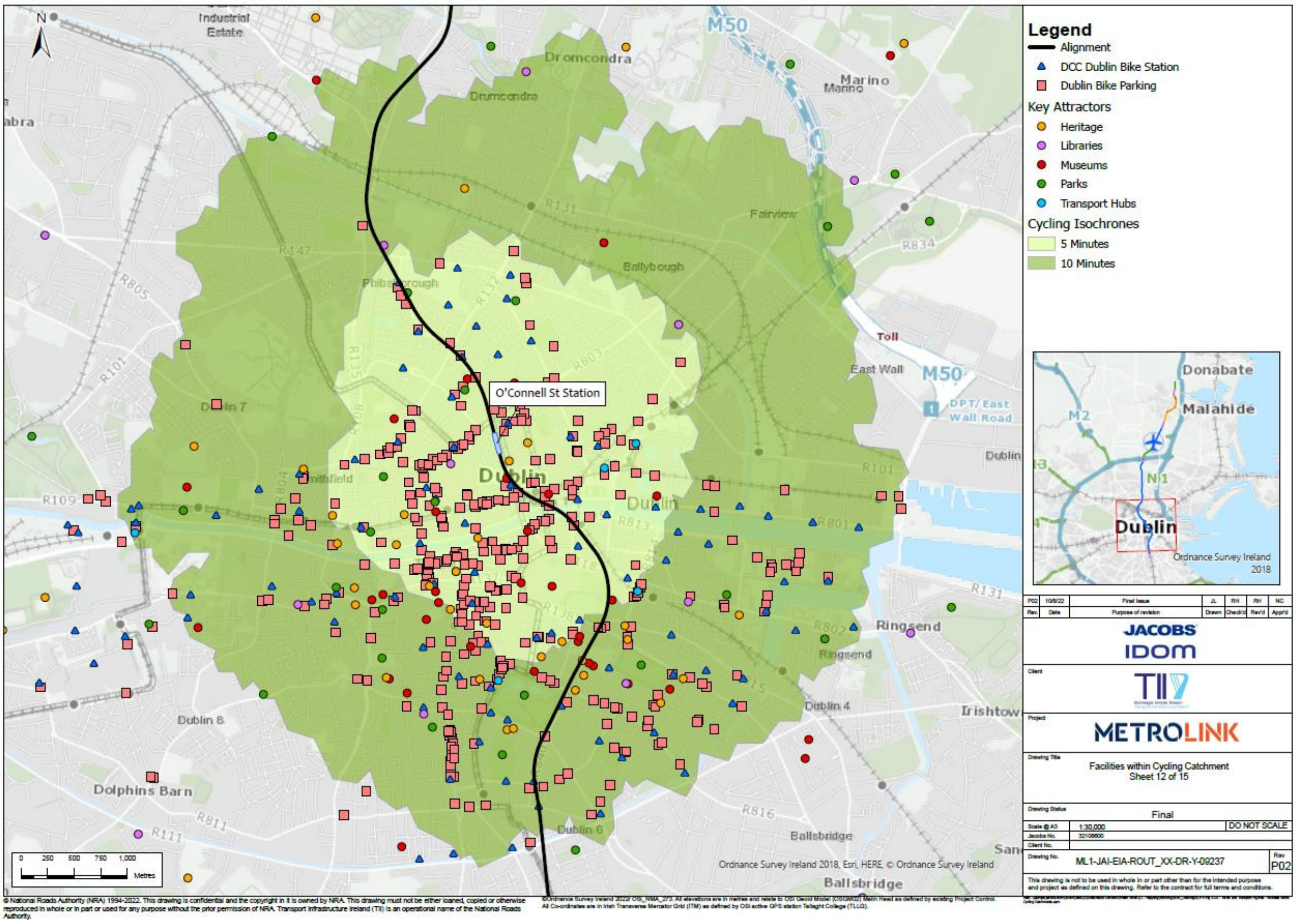


Figure 3.8: O'Connell Street Station Cycling Catchment Area

Table 3.3 lists facilities and amenities within 5min and 10min cycling from the proposed O'Connell Street Station.

Table 3.3: Local facilities and amenities within cycling catchment area

Facilities within 5min cycling	Facilities within 10min cycling
All facilities identified for the 5min walking catchment	Croke Park
Blessington Street Park (Phibsborough)	Dalymount Park
International Financial Services Centre (IFSC)	Fairview Park
Custom House Quay (CHQ)	Merrion Square Park
Connolly train station	St Stephens Green Park
Trinity College and College Park	Iveagh Gardens
Temple Bar	National Museum of Ireland
Mater Hospital	Grand Canal Dock
Dublin Castle	St Brendan's Hospital
Grafton Street	

3.9 Future Receiving Environment – Cycle Network

The cycle network around O'Connell Street will remain unchanged from the baseline scenario.

4. The Proposed Project – O'Connell Street Station

4.1 Site Location and Development Context

O'Connell Street Station will be an underground station located to the western side of O'Connell Street, at the crossroads of O'Connell Street Upper, Parnell Street and Cavendish Row, as shown in Figure 4.1. There will be two passenger entrances to the station, one on the western side of O'Connell Street Upper, and one at the junction of Moore Lane and O'Rahilly Parade to the west of O'Connell Street. A passenger lift will also be located at both entrances. As this is a key Dublin City Centre location, there will be no alterations made to the existing networks, including public transport, road, pedestrian or cycling networks.

The proposed station box for the proposed Project's O'Connell Street Station will be directly below the Dublin Central masterplan area. Pedestrian access to the proposed Dublin Central development will be from the surrounding streets and lanes, while pedestrian access to the future O'Connell Street Station will be from the public open space between O'Connell Street and Moore Lane a total of 364 cycle parking spaces will be provided as part of the Dublin Central proposals.

O'Connell Street Upper is also served by the Luas Green Line, facilitating interchange to access areas such as Grangegorman and Broombridge. The Luas Red Line serves Abbey Street, to the south-east of the proposed station, connecting to O'Connell Street. O'Connell Street is also served by multiple bus routes with multiple frequencies.

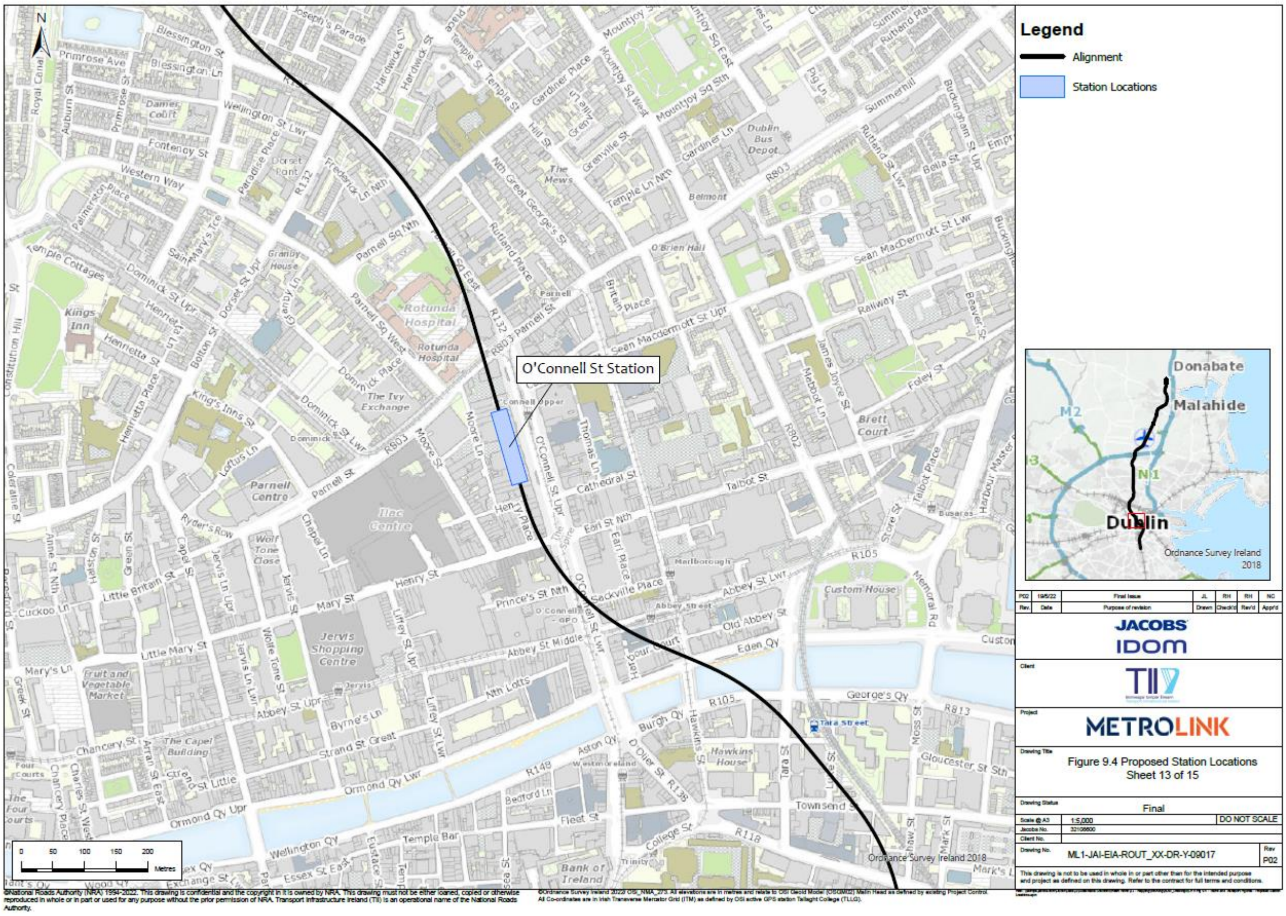


Figure 4.1: Proposed Site Location

Figure 4.2 illustrates the proposed layout for O'Connell Street Station, including improvements to pedestrian crossings, location of entrances and exits and bike parking area. There are two main entrances to the platforms, one on the western side of O'Connell Street Upper, and one on Moore Lane, at the junction with O'Rahilly Parade.

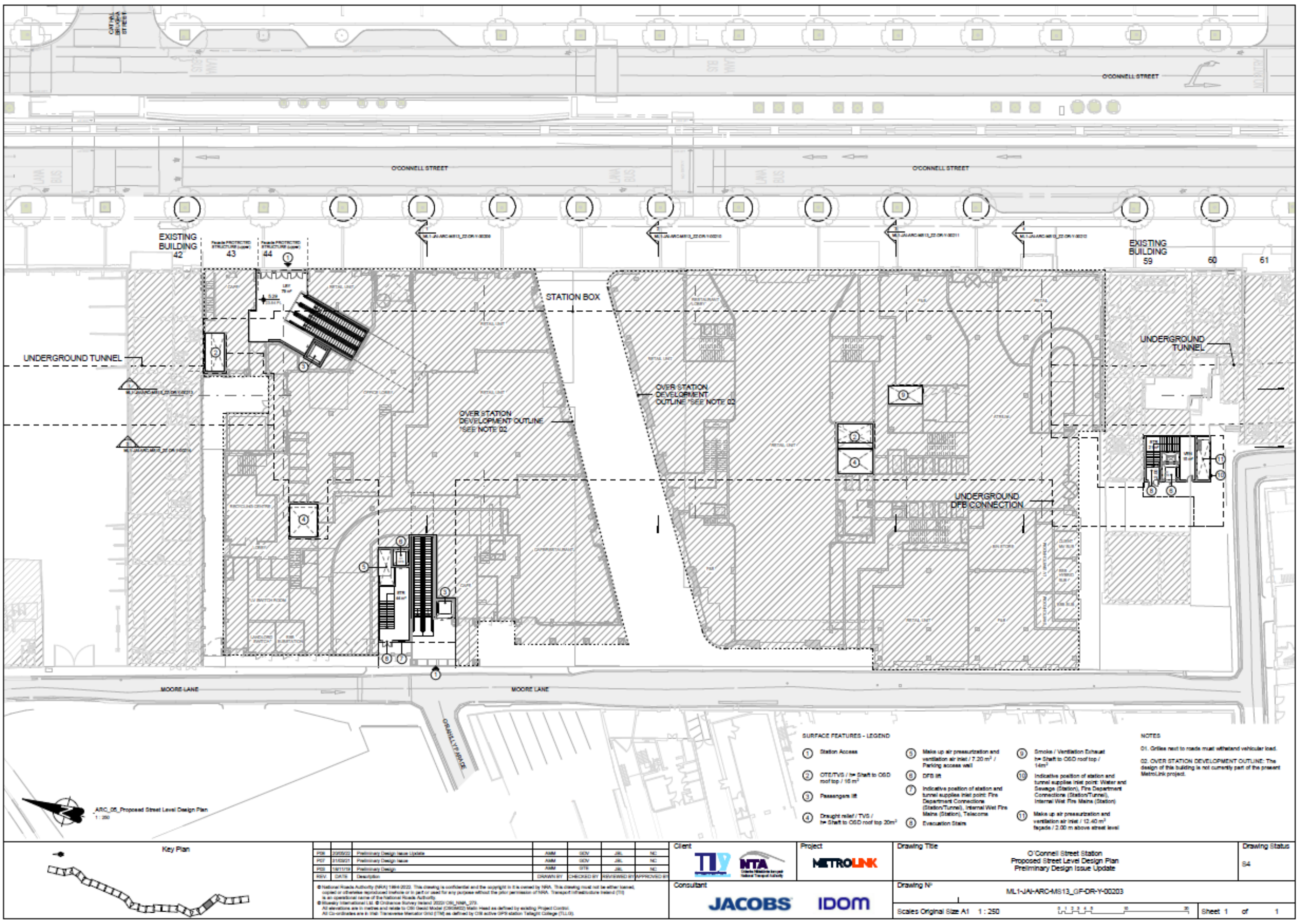


Figure 4.2: O'Connell Street Station Layout

5. Trip Generation / Trip Attraction

5.1 Operational Phase

Traffic estimates associated with the O'Connell Street Station Operational Phase will be established by utilising the National Transport Authority's (NTA) East Regional Model (ERM). The ERM provides a comprehensive representation of multi-modal travel patterns across the Greater Dublin Area and is a suitable tool for the testing and appraisal of the proposed Project.

5.1.1 Passenger Boarding and Alighting

Passenger demand modelling has been used to predict the numbers of passengers boarding and alighting at each station, and the resulting passenger load on the Project, for the years 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). The scenarios considered for assessment for each of the years 2035, 2050 and 2065 are outlines in Table 5.1.

Table 5.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project.
Do Minimum Scenario	Committed transport schemes in the absence of the Project.
Do Something - Scenario A	Scenario with the Project and committed transport schemes only.
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for Opening year (2035) and planned schemes under the Transport Strategy for the GDA for the Design Year (2050) and the Forecast Year (2065).

5.1.1.1 Boarding and Alighting Volumes

Table 5.2 to Table 5.9 show boarding, alighting and interchange numbers for the O'Connell Street Station at different peak periods along with the destination and origins of passengers in the AM Peak. All the data has been retrieved from the ERM developed by the NTA. Data in this section was obtained for the busiest hour within each of the following peak periods:

- AM: busiest hour between 07:00 – 10:00;
- LT (lunch time): busiest hour between 10:00 – 13:00;
- SR (school run): busiest hour between 13:00 – 16:00; and,
- PM: busiest hour between 16:00 – 19:00.

Figure 5.1 presents the volume of passengers boarding and alighting at O'Connell Street Station over the 12hr peak period (07:00-19:00) in both Scenario A and Scenario B. Scenario A is expected to have approximately 16,200 boarding passengers and 14,300 alighting passengers in 2065; and Scenario B is expected to have approximately 13,000 boarding passengers and 12,600 alighting passengers in 2065.

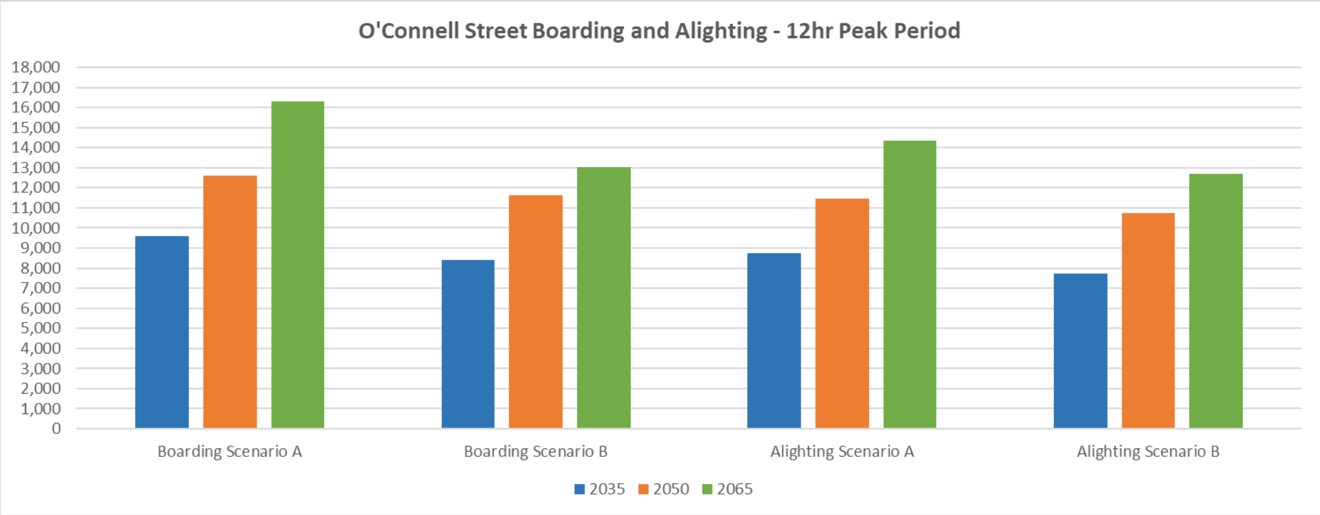


Figure 5.1: O'Connell Street 12hr Boarding and Alighting in Scenario A and Scenario B

5.1.1.2 Boarding and Alighting Volumes: Scenario A

Table 5.2 to Table 5.3 below highlight the boarding and alighting passenger numbers for Tara Street Station in Scenario A.

Table 5.2 shows the boarding and alighting passenger numbers during the Opening Year, 2035. In the AM peak hour, 1,000 northbound passengers are expected to board, while 1,452 southbound passengers are expected to alight. In the PM peak hour, 1,330 northbound passengers are expected to board, while 668 southbound passengers are expected to alight.

Table 5.2 – Boarding and Alighting Numbers at O'Connell Street Station in 2035, Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	1,000	37	4,621	594	14	2,997	721	15	3,731	1,330	43	7,924
Southbound	86	1,452	9,235	19	623	2,983	18	683	2,965	56	668	3,372

Source: East Regional Model (ERM)

For the year 2050, during the AM peak hour, 1,296 northbound passengers are expected to board, while 1,739 southbound passengers are expected to alight. During the PM peak hour, 1,667 northbound passengers are expected to board, while 875 southbound passengers are expected to alight.

Table 5.3 – Boarding and Alighting Numbers at O'Connell Street Station in 2050, Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	1,296	42	5,638	888	16	4,218	943	17	4,610	1,667	47	9,690
Southbound	113	1,739	10,892	23	942	4,292	21	921	3,801	63	875	4,149

Source: East Regional Model (ERM)

For the year 2065, during the AM peak hour, 1,585 northbound passengers are expected to board, while 2,105 southbound passengers are expected to alight. During the PM peak hour, 2,116 northbound passengers are expected to board, while 1,160 southbound passengers are expected to alight.

Table 5.4 – Boarding and Alighting Numbers at O'Connell Street Station in 2065, Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	1,585	65	6,727	1,151	24	5,059	1,327	26	6,097	2,116	66	11,982
Southbound	148	2,105	12,979	30	1,125	4,868	27	1,183	4,720	82	1,160	5,124

Source: East Regional Model (ERM)

5.1.1.3 Boarding and Alighting Volumes: Scenario B

Table 5.5 to Table 5.7 below highlight the boarding and alighting passenger numbers for O'Connell Street Station in Scenario B.

For the year 2035, during the AM peak hour, 798 passengers are expected to board MetroLink vehicles at O'Connell Street Station and travel north. 99 passengers will board the MetroLink vehicles and head south, while 54 northbound passengers and 1,282 southbound passengers will alight. During the PM peak hour, 61 southbound passengers and 1,147 northbound passengers are expected to board, while 56 northbound passengers and 495 southbound passengers are expected to alight.

Table 5.5 – Boarding and Alighting Numbers at O'Connell Street Station in 2035, Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	798	54	4,326	526	18	2,936	674	20	3,843	1,147	56	7,301
Southbound	99	1,282	8,567	19	609	3,037	18	596	2,916	61	495	3,046

Source: East Regional Model (ERM)

Table 5.6 shows the passenger boarding and alighting numbers for the 2050 year. During the AM peak hour, 1,301 passengers are expected to board MetroLink vehicles at O'Connell Street Station and head north, while 91 passengers will board and head south. It is expected 1,662 southbound passengers will alight at O'Connell Street Station while 48 northbound passengers will alight. During the PM peak hour, 50 southbound passengers and 1,548 northbound passengers are expected to board, while 45 northbound passengers and 866 southbound passengers are expected to alight.

Table 5.6 – Boarding and Alighting Numbers at O'Connell Street Station in 2050, Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	1,301	48	5,644	800	16	4,385	825	17	4,528	1,548	45	8,274
Southbound	91	1,662	8,921	18	870	4,167	17	808	3,902	50	866	4,065

Source: East Regional Model (ERM)

For the year 2065, during the AM peak hour, 1,264 passengers are expected to board MetroLink vehicles at O'Connell Street Station and travel north. 98 passengers will board MetroLink vehicles and head south, while 52 northbound passengers and 2,046 southbound passengers will alight. During the PM peak hour, 56 southbound passengers and 1,670 northbound passengers are expected to board, while 49 northbound passengers and 949 southbound passengers will alight.

Table 5.7 – Boarding and Alighting Numbers at O'Connell Street Station in 2065, Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	1,264	52	6,336	946	19	5,139	1,089	19	5,843	1,670	49	9,064
Southbound	98	2,046	11,086	22	1,024	4,920	19	961	4,658	56	949	4,343

Source: East Regional Model (ERM)

5.1.1.4 Public Transport Interchange Volumes

O'Connell Street Station is located along several bus routes, including multiple Spine routes and Other City Bound Routes as part of the Bus Network Redesign. O'Connell Street is also served by the Luas Green Line. More information on the future public transport network around the station can be found in Section 3.3 of this document.

The following tables present the volume of passengers interchanging to and from MetroLink vehicles with other public transport modes in Scenario A and Scenario B, in both AM and PM peak hours. Most passengers are alighting at this station in the AM peak hour as their final stop, and are first boarding here in the PM peak hour. However, there are also significant interchange volumes to and from the Luas, particularly in the AM peak hour.

Table 5.8: Transfers To/From Other Public Transport Modes in Scenario A

Scenario A									
Year	Peak	Boarding				Alighting			
		First Boarding	From Bus	From Rail/DART	From Luas	Final Stop	To Bus	To Rail/DART	To Luas
2035	AM	364	99	-	622	1057	19	-	413
	PM	948	23	-	416	319	17	-	376
2050	AM	440	136	-	833	1222	19	-	540
	PM	1147	31	-	552	376	19	-	526
2065	AM	532	161	-	1040	1476	23	-	670
	PM	1444	41	-	713	482	24	-	720

Source: East Regional Model (ERM)

Table 5.9: Transfers To/From Other Public Transport Modes in Scenario B

Scenario B									
Year	Peak	Boarding				Alighting			
		First Boarding	From Bus	From Rail/DART	From Luas	Final Stop	To Bus	To Rail/DART	To Luas
2035	AM	366	74	-	456	994	22	-	320
	PM	864	23	-	320	296	19	-	236
2050	AM	396	246	-	750	1142	20	-	547
	PM	1078	28	-	493	371	17	-	522
2065	AM	449	112	-	801	1388	22	-	689
	PM	1116	32	-	579	357	19	-	622

Source: East Regional Model (ERM)

5.1.1.5 Distribution of Boarding and Alighting Passengers

Figure 5.2 shows the origins of passengers arriving to board at the station and Figure 5.3 shows the destination of passengers alighting at O'Connell Street Station during the AM peak. The width of the lines is proportional to the number of commuters leaving/arriving at the station. In addition to substantial transfers from the Luas, significant origins of passengers in the AM peak include the residential area around Mountjoy Square, and Connolly Rail Station.

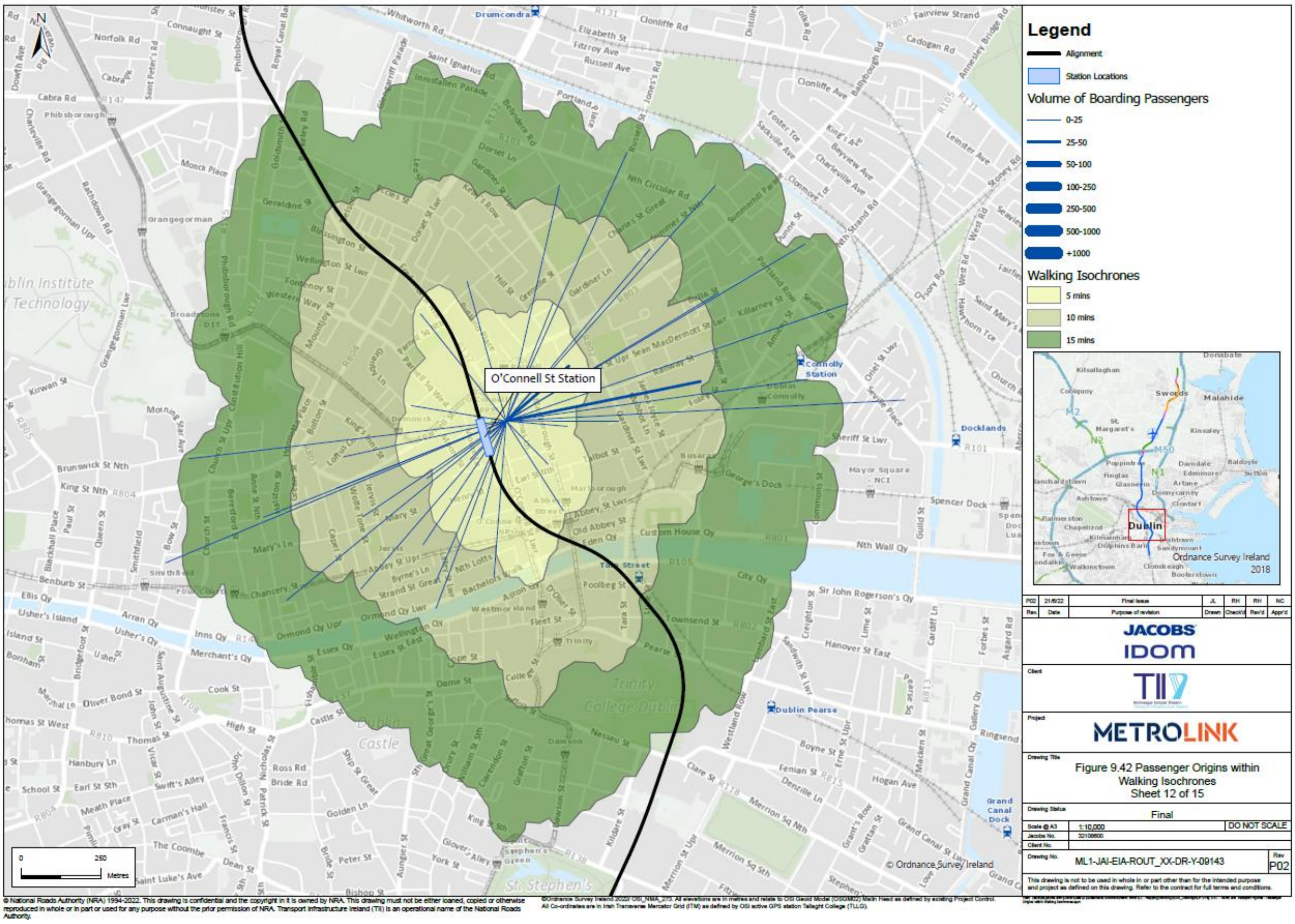


Figure 5.2: Origin of Boarding Passengers During AM peak hour and Walking Catchment Areas

Multiple destinations receive significant volume of disembarking passengers in the AM peak, including the Rotunda Hospital, stops along the Luas Red Line such as Smithfield and Abbey Street, the commercial district to the east and west of O'Connell Street and Connolly Train Station.

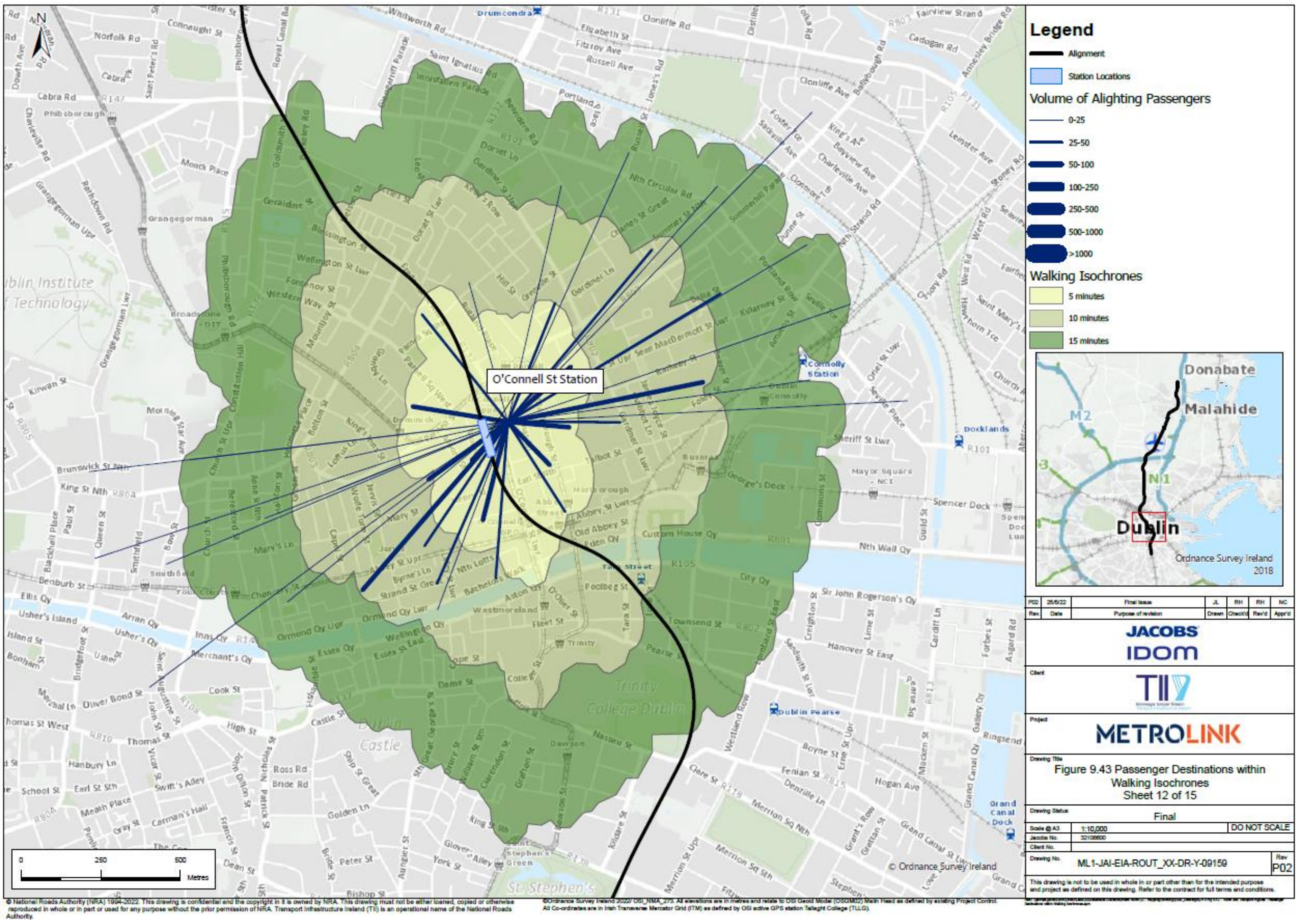


Figure 5.3: Destination for Alighting Passengers During AM peak hour and Walking Catchment Areas

6. Assessment of Impacts

6.1 Operational Phase

As part of the assessment of impacts associated with the Operational Phase of the proposed Project, the impact of the proposed O'Connell Street Station will be examined on all modes of transport – public transport (PT), general traffic, walking and cycling.

6.1.1 Public Transport Impact Assessment

When the proposed Project is in place at O'Connell Street there will be no changes made to the existing road and public transport layout. As a Dublin City Centre location, the station is located along several bus routes, including multiple routes of multiple frequencies as part of the Bus Network Redesign. O'Connell Street is also served by the Luas Green Line, facilitating interchange between the Project and other modes of public transport. As part of the Bus Network Redesign proposals, O'Connell Street will be served by multiple Spine routes and Other City Bound Routes.

The NTA's ERM has been interrogated to estimate the reduction in private car trips associated with the origin and destination trips in the zones around O'Connell Street Station. The mode share split between public transport, active travel, and car users in Scenario A and Scenario B are shown in Figure 6.1 and Figure 6.2 respectively. These are based on trips made from zones within a 2km catchment of the station over a 12-hour period.

In Scenario A, PT mode share is estimated to increase by up to 2 percentage points (including the Project) compared to the Do Minimum, bringing potential PT mode share up to 42% in 2065. Car mode share is estimated to decrease by up to 1 percentage point compared to the Do Minimum in 2035 and 2050, and 0 percentage point in 2065, bringing it down to 22% in 2035, 20% in 2050, and 19% in 2065. Active modes mode share, which includes walking and cycling, is estimated to decrease by up to 1 percentage points compared to the Do Minimum, to 39% by 2065. Overall, there will be an expected shift towards sustainable modes (PT and active modes), and a reduction in car mode share for trips made from zones around O'Connell Street Station.

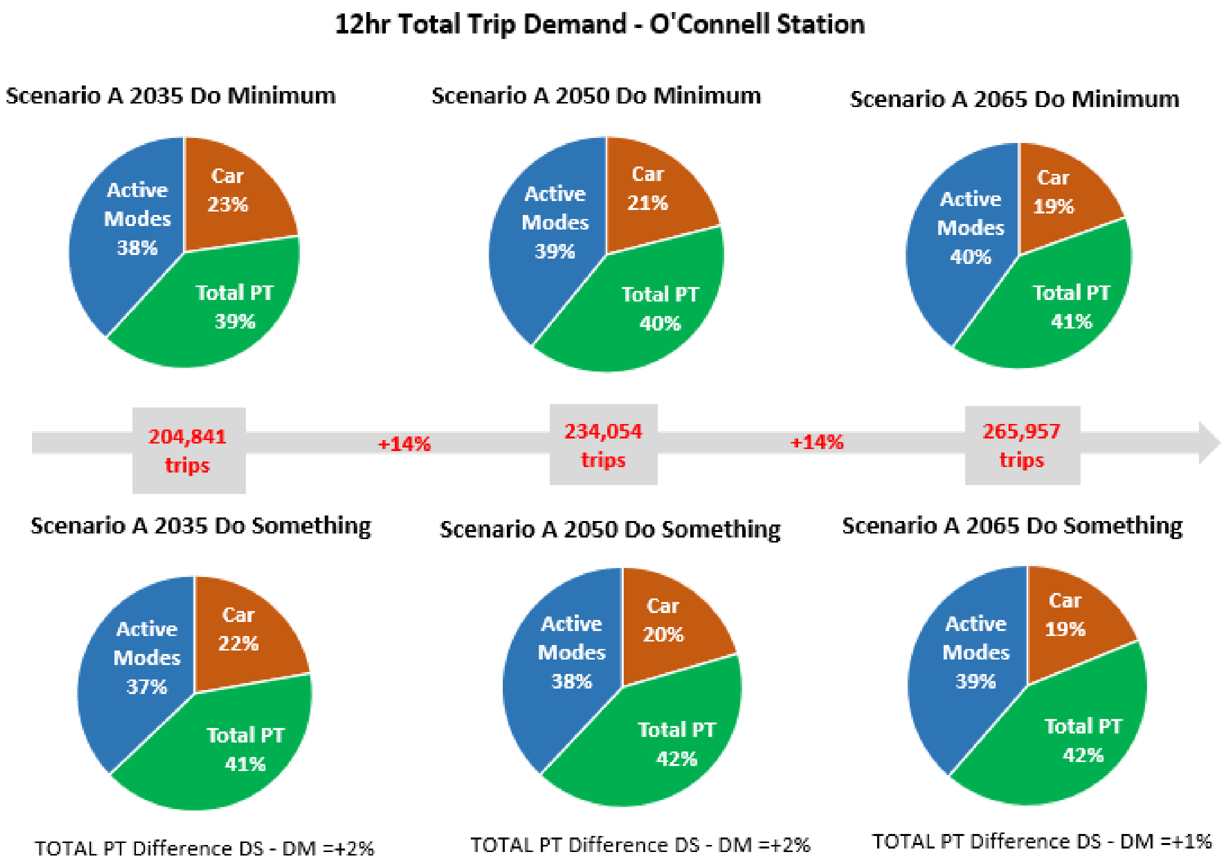


Figure 6.1: Mode Share of Trips from Zones around O'Connell Street Station - Scenario A

In Scenario B, PT mode share is estimated to increase by up to 1 percentage point (including the Project) compared to the Do Minimum, bringing potential PT mode share up to 45% in 2065. Car mode share is estimated to be unchanged compared to the Do Minimum, at 22% in 2035, 20% in 2050, and 19% in 2065. Active modes mode share, which includes walking and cycling, is estimated to decrease by up to 1 percentage points compared to the Do Minimum, to 36% by 2065. Overall, there will be an expected shift from active modes to public transport (including the Project), with car mode share remaining unchanged for trips made from zones around O'Connell Street Station.

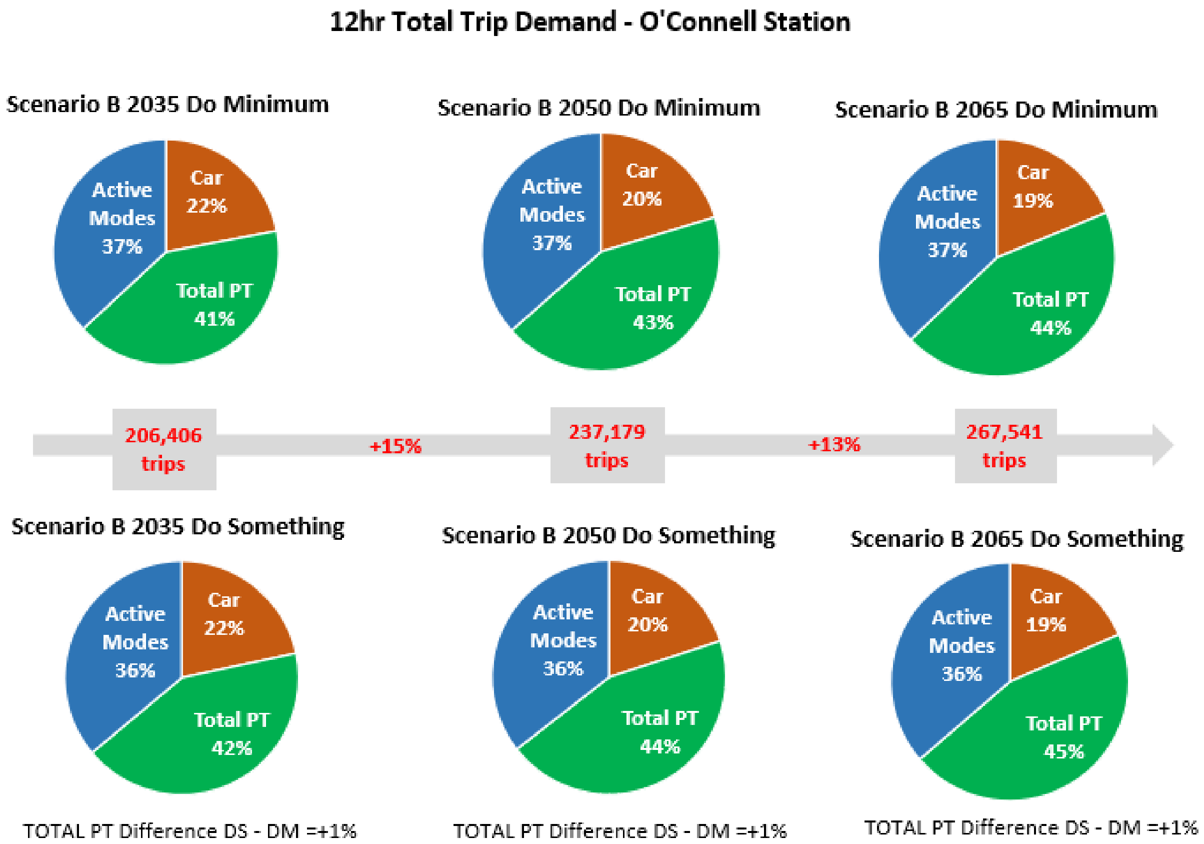


Figure 6.2: Mode Share of Trips from Zones around O'Connell Street Station - Scenario B

Figure 6.3 presents the changes in public transport mode share between the Do Minimum and Do Something scenarios in Scenario A 2065 AM Peak Hour, while Figure 6.4 presents the same for Scenario B 2065 AM Peak Hour.

In the AM peak hour of 2035, 2050, and 2065, for both Scenario A and Scenario B, most zones immediately surrounding O'Connell Street Station see estimated increase in PT mode share (including the Project) of 1-5 percentage points. In the AM peak hour of 2065, for Scenario A, all zones around O'Connell Street Station see estimated increase in PT mode share (including the Project) of 1-5 percentage points, with some zones east of the station seeing estimate increase of 5-10 percentage points.

In the PM peak hour of 2035 and 2050, and 2065, for Scenario A, most zones immediately surrounding O'Connell Street Station see estimated increase in PT mode share (including MetroLink) of 1-5 percentage points. In the PM peak hour of 2035, for Scenario B, the zones east and west of O'Connell Street Station see estimated increase in PT mode share (including the Project) of 1-5 percentage points; and by 2050 and 2065, zones to the north of the station also see similar levels of increase.

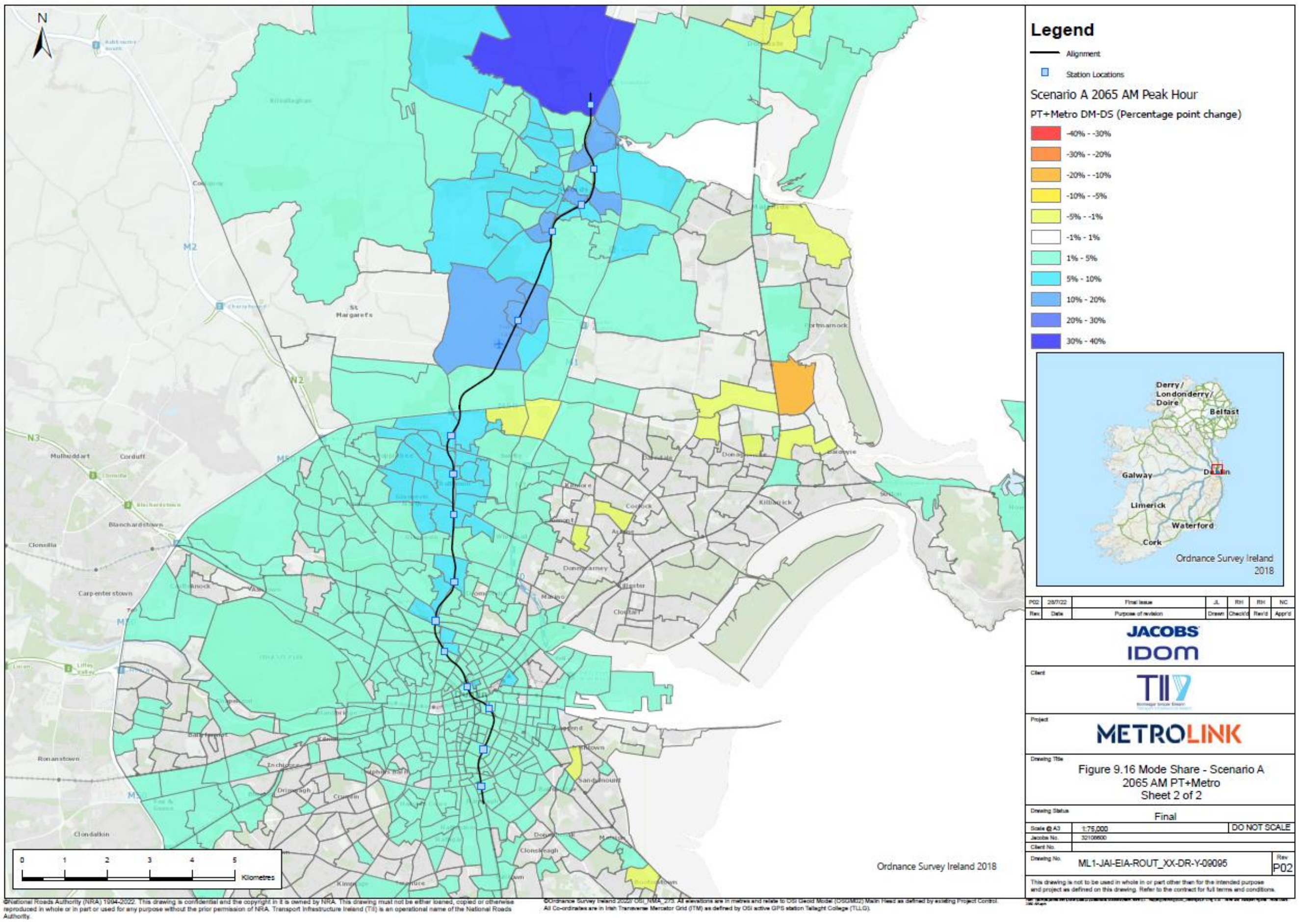


Figure 6.3: Changes in Public Transport Mode Share (including the Project) in Scenario A 2065 AM Peak Hour

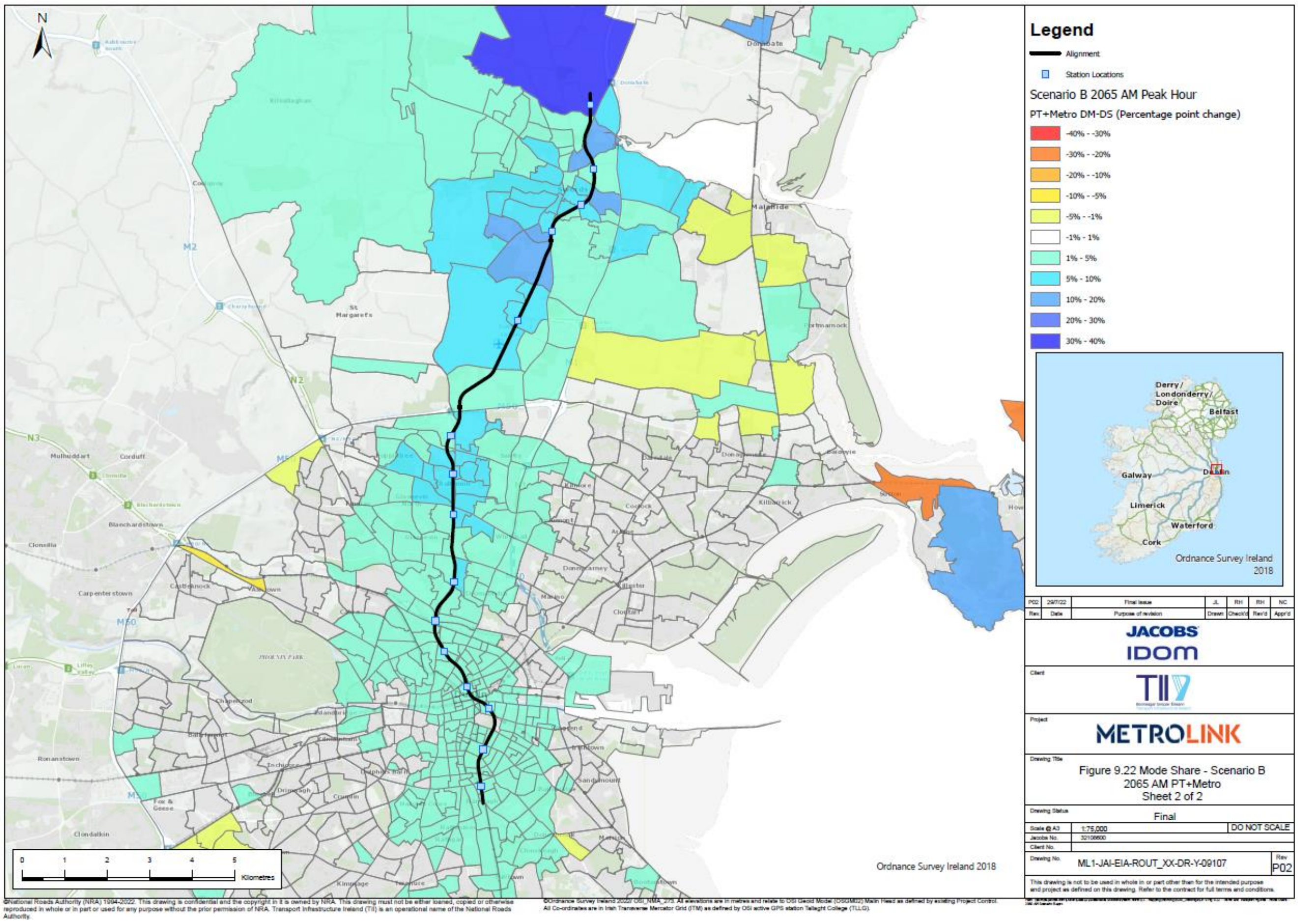


Figure 6.4: Changes in Public Transport Mode Share (including the Project) in Scenario B 2065 AM Peak Hour

In Scenario A the following changes to journey times are observed:

- The most significant PT journey time savings are for journeys from O'Connell Street to Swords Pavilion, with savings of approximately 20 minutes in the 2035 AM period, increasing to a saving of approximately 23 minutes in the 2065 AM period.
- PT journey time savings for journeys from O'Connell Street to Dublin Airport are estimated as approximately 20 minutes in the 2035, 2050, and 2065 AM period.
- PT journey time savings for journeys from O'Connell Street to other areas in north Dublin city, such as Ballymun and DCU are estimated as approximately 15 minutes and 11 minutes respectively, in the 2035, 2050, and 2065 AM period.

In Scenario B the following changes to journey times are observed:

- The most significant PT journey time savings are for journeys from O'Connell Street to Dublin Airport, with savings of approximately 22 minutes in the 2035 AM period, increasing to a saving of approximately 24 minutes in the 2065 AM period.
- PT journey time savings for journeys from O'Connell Street to Swords Pavilion are estimated as approximately 17 minutes in the 2035 AM period, rising to 19 minutes in the 2065 AM period.

- PT journey time savings for journeys from O'Connell Street to other areas in north Dublin city, such as Ballymun and DCU are estimated as approximately 14 minutes and 11 minutes respectively, in the 2035, 2050, and 2065 AM period.

6.1.2 Traffic Impact Assessment

The future street level plan at O'Connell Street Station will have no impacts to the current road layout.

Figure 6.5 shows the changes in Car mode share per zone in Scenario A 2065 AM peak hour, with Figure 6.6 presenting the same for Scenario B 2065. In the 2035 period, the zones surrounding O'Connell Street Station see changes in car mode share of less than 1 percentage point. In the 2050 and 2065 AM periods, the reductions in car mode share extend further beyond the alignment, such as along the R148 eastbound.

Over the 12hr period, the zones within a 2km radius of O'Connell Street Station see a reduction of over 380 car trips between the Scenario A 2035 Do Minimum and Do Something scenarios, reaching a reduction of over 840 trips in Scenario A 2050. In 2065, there is a reduction of 1,200 car trips between the Do Minimum and Do Something scenarios. In Scenario B, these zones see a reduction of almost 360 car trips between the 2035 Do Minimum and Do Something scenarios, with a reduction of 210 car trips in 2050. 2065 sees a reduction of 370 car trips between the Do Minimum and Do Something scenarios.

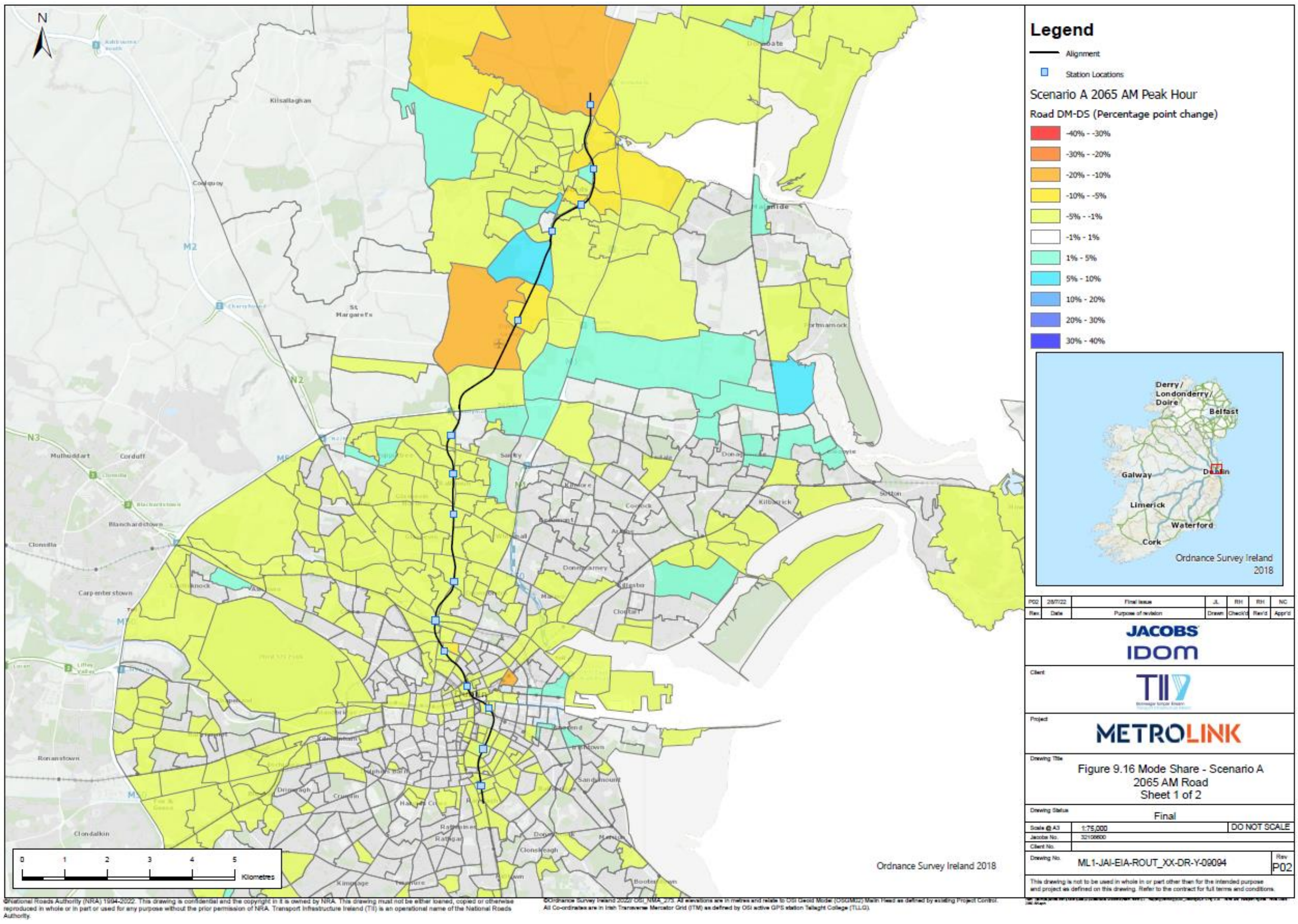


Figure 6.5: Changes in Car Mode Share in Scenario A 2065 AM Peak Hour

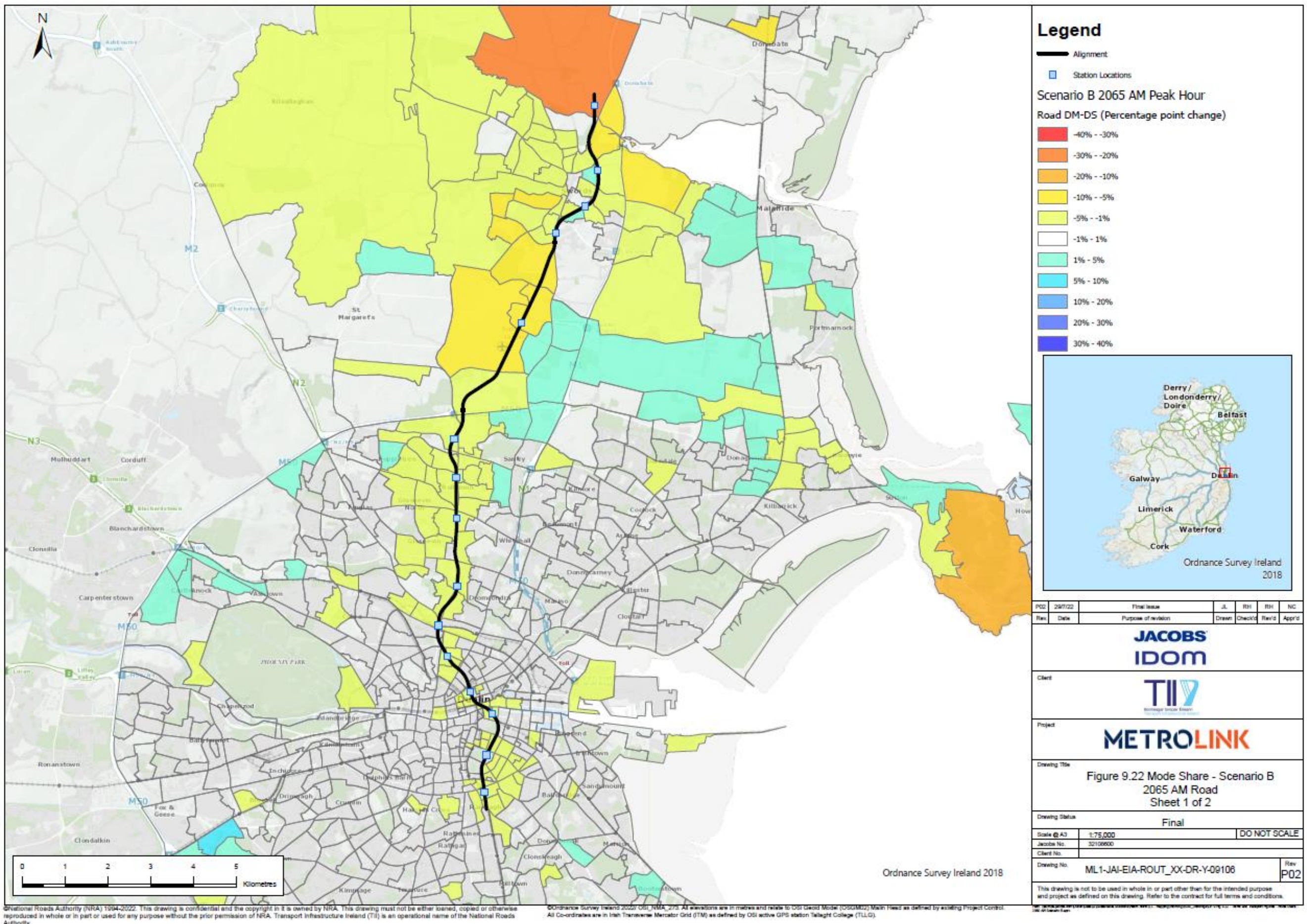


Figure 6.6: Changes in Car Mode Share in Scenario B 2065 AM Peak Hour

6.1.3 Pedestrian Impact Assessment

The proposed street level layout will have no impact on the current pedestrian layout on O'Connell Street, with a pedestrian connection to Moore Lane where there will be an alternative station access.

An assessment of the pedestrian provision around the station has been undertaken, in order to confirm its robustness in catering for the additional demand associated with the proposed Project. This assessment consists of two parts.

Firstly, as at other stations, a 'Footway Comfort Assessment', which predicts the pedestrian comfort levels at a relatively strategic level based on industry guidance, taking cognisance of factors including pedestrian demand and footway width.

Secondly, a similar but more fine-grained assessment has been undertaken, covering the local street network immediately adjacent to the station site. This has been undertaken for the 2045 and 2060 future year scenarios, both with and without the Dublin Central development in place. This broadly aligns with the pedestrian movement analysis undertaken by Hammerson Ireland (Space Syntax, 2021) which includes the operation of the O'Connell Street Station, also indicates that in the morning peak, O'Connell Street, Parnell Street West, Moore Street and O'Rahilly Parade will have a 'Comfortable' pedestrian comfort level. In the evening peak, the section of O'Connell Street at the station entrance, and Parnell Street West will be an 'Acceptable' pedestrian comfort level.

As the pedestrian assessment scenarios differ from those of the EIAR, the percentage difference in total boarding passengers between the relevant years was calculated. From 2045 to 2050 there is a 2% increase in the volume of total boarding passengers at O'Connell Street in Scenario A, whilst from 2060 to 2065 there is a 6% decrease in the total number of boarding passengers. As such, the assessment is a reasonable representation of the forecasted operation of the O'Connell Street Station.

6.1.3.1 Footway Comfort Assessment

The Scenario A 2050 design year was assessed, with Scenario A 2065 also assessed as the 'worst-case scenario' for passenger numbers, as this scenario has the highest volume of total AM passenger demand in the future year between both Scenario A and Scenario B (almost 61,000 AM boarding passengers across the alignment in Scenario A, compared to almost 55,000 AM boarding passengers in Scenario B). At all stations, the passenger demand in the AM peak hour is lower in Scenario B than in Scenario A, with the exception of Fosterstown Station where there is a 12% increase in Scenario B. As such, Scenario B has not been assessed, with the exception of Fosterstown Station to ensure that all possible significant impacts are accounted for.

The assessment of the 2050 and 2065 AM peak hour scenario indicates that all links comply with DCC guidance and are deemed 'Comfortable' with the exception of Parnell Street West, however this link has an 'Acceptable' comfort level.

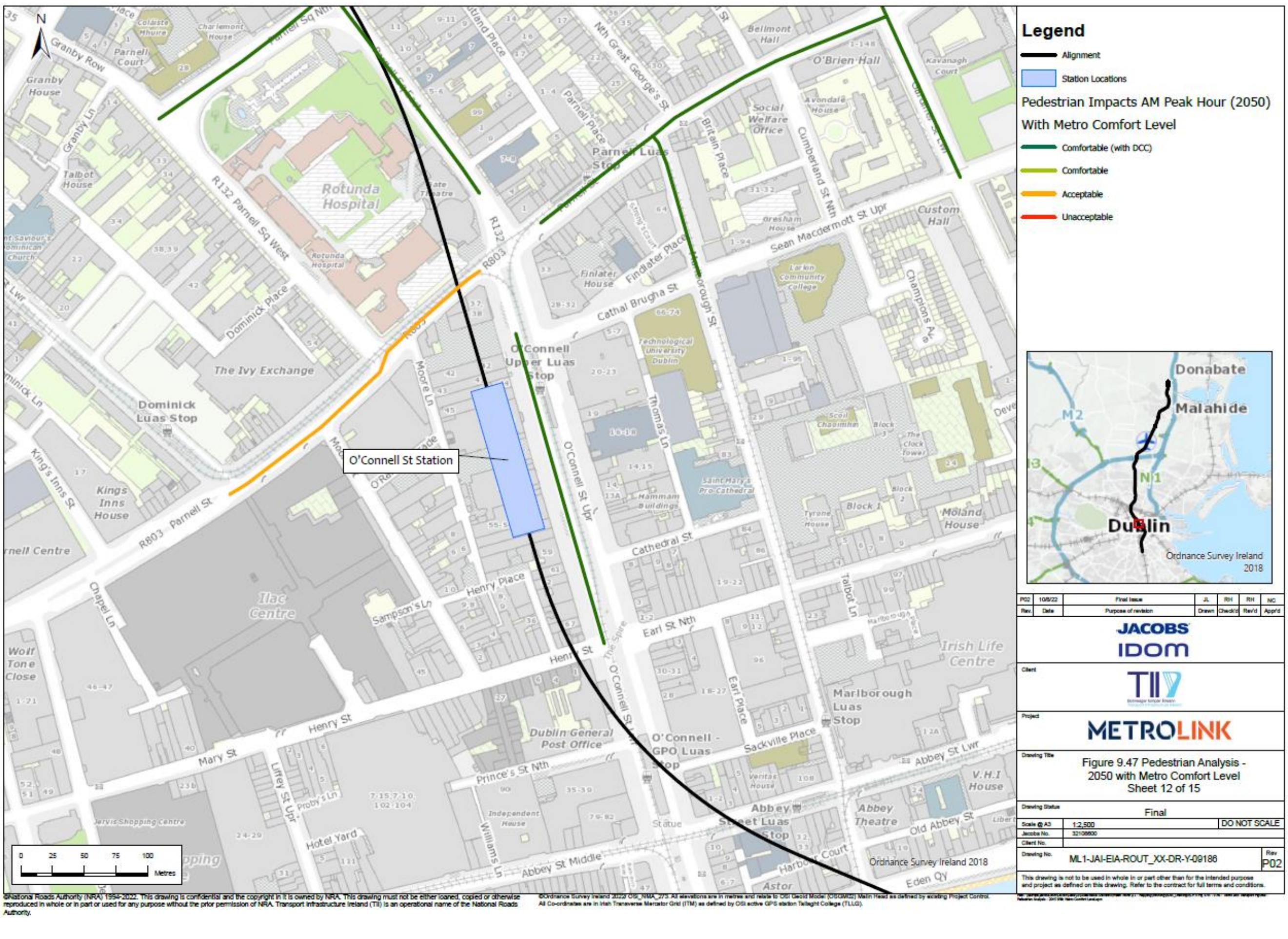


Figure 6.7: Pedestrian Comfort Assessment with the Project –Scenario A 2050 AM Peak Hour

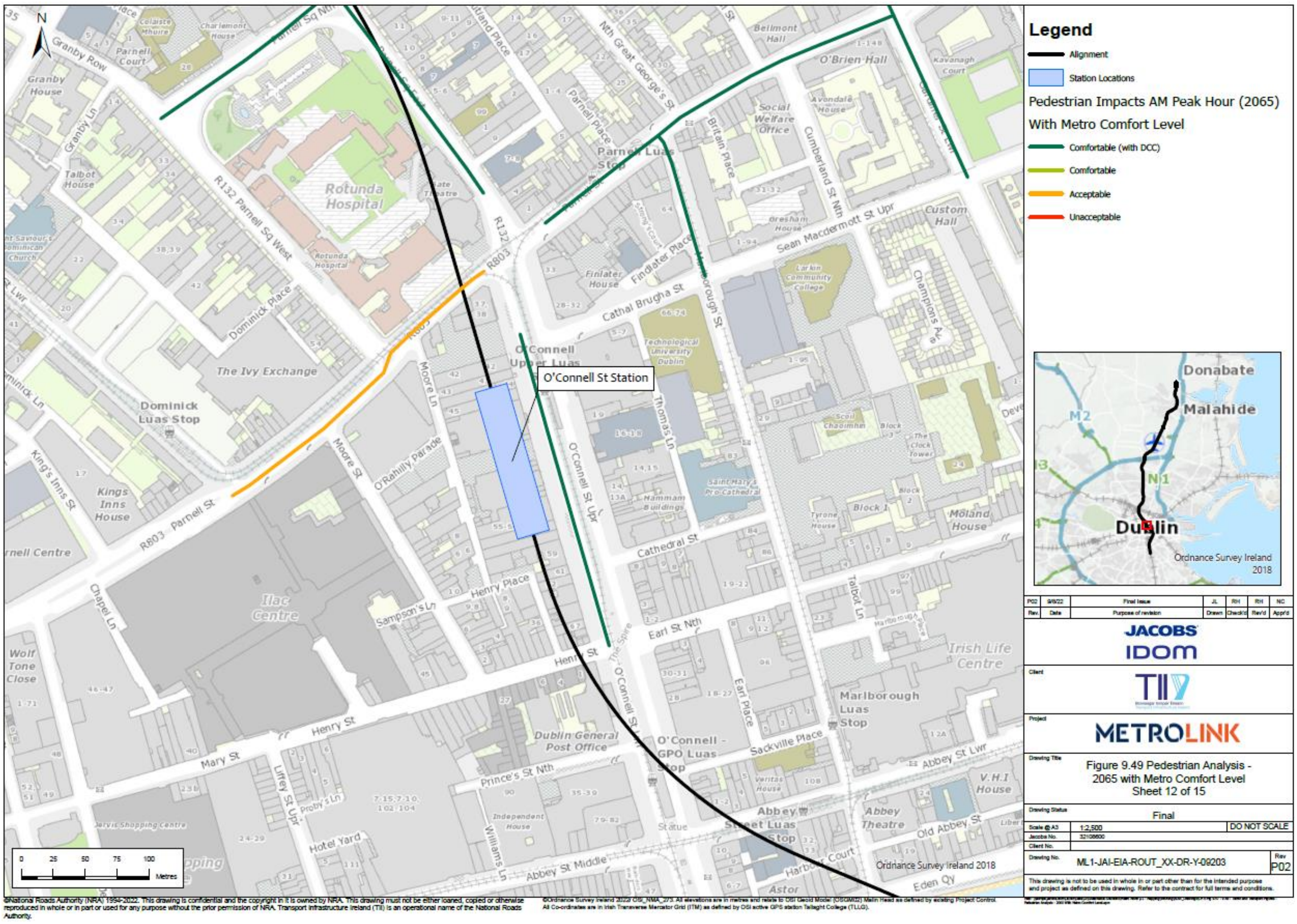


Figure 6.8: Pedestrian Comfort Assessment with the Project – Scenario A 2065 AM Peak Hour

6.1.3.2 Immediate Area Impact and interaction with Dublin Central

Analysis of the immediate station area and interaction with the Dublin Central development was undertaken on the basis of local footfall surveys (Space Syntax, 2018), footfall projections for the impact of Dublin Central development on its' own (Space Syntax, 2021) and forecast pedestrian flows for Scenario A in 2045 and 2060.

Figure 6.9 shows the baseline (2018, no development) footfall for the weekday AM peak hour (08:00-09:00) and the selected study area.

Footway performance was reviewed for both AM and PM peak hours for the base (2018 survey or 2021 projected impact of Dublin Central) and then 2045 and 2060 footfall forecasts. PCLs were reviewed for 23 review points. As highlighted in Table 6.1 only one location (a section of Parnell Street where footway width is below 2.0m) is highlighted as 'At risk' or 'Uncomfortable'. This is identified as an existing issue in the base scenario and forecast impacts from introduction of the Project reach a maximum of 19% growth in the more challenging PM peak period.

Overall, with the exception of this one existing location, the local station area is confirmed as retaining acceptable pedestrian comfort levels for the full range of demand and development scenarios.

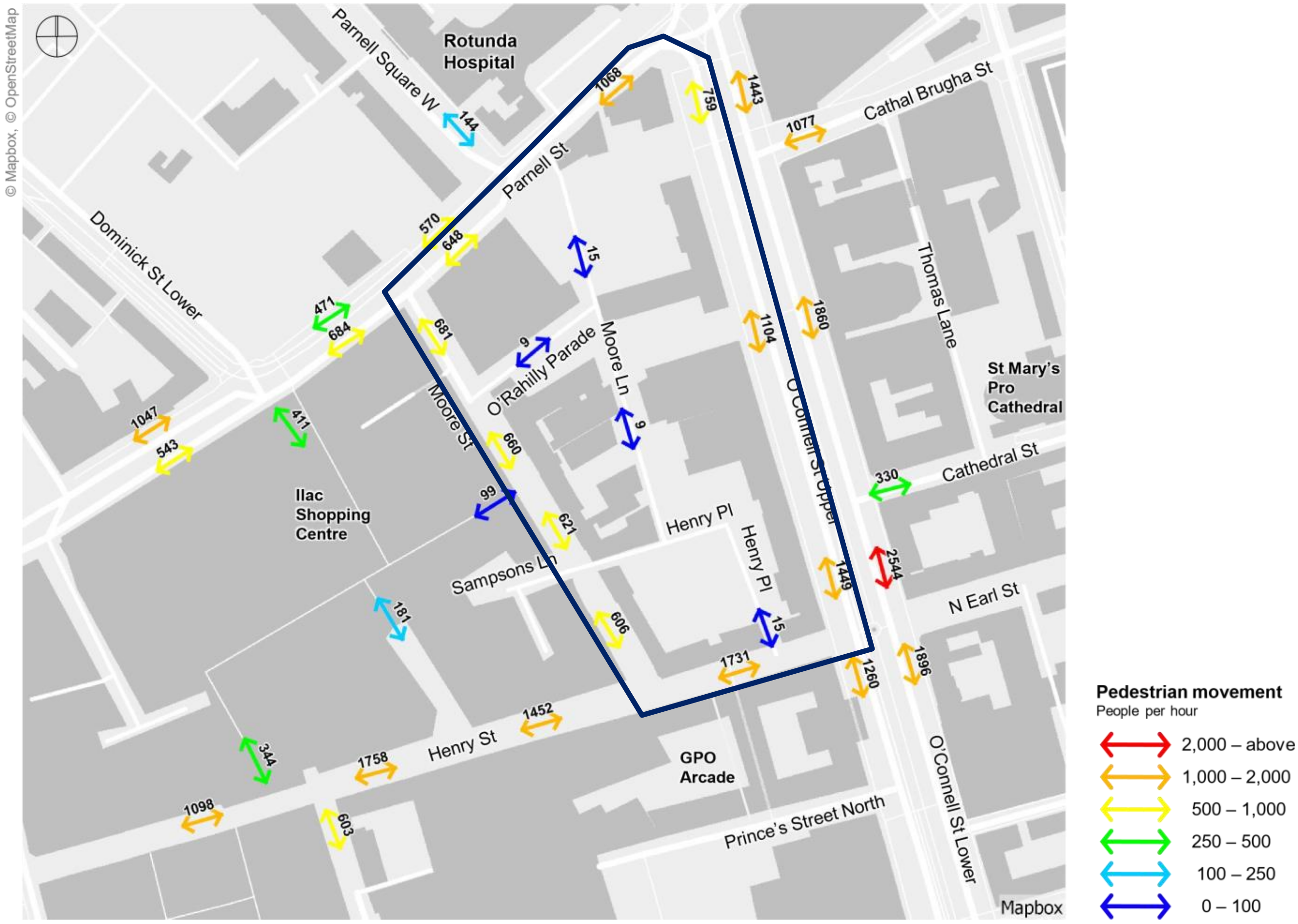


Figure 6.9: 2018 AM peak hour survey volumes (Space Syntax) and selected study area

Table 6.1: Immediate Area, street locations with 'At Risk' or 'Uncomfortable' PCL 'ratings

	Base Year (2021/2018)	2045 Scenario A	2060 Scenario A
Without Dublin Central Development	Parnell Street (Uncomfortable, PM)	Parnell Street (Uncomfortable, PM)	Parnell Street (Uncomfortable, PM) Parnell Street (At risk, PM)
With Dublin Central	Parnell Street (At risk, PM)	Parnell Street (Uncomfortable, PM)	Parnell Street (Uncomfortable, PM)

6.1.4 Cycling Impact Assessment

The future street level layout does not make any alterations to the current cycle infrastructure at this location, so there will be no impact to the Quality of Service of cycling infrastructure around O'Connell Street Station when the proposed Project is in place.

No further cycle spaces are proposed for O'Connell Street Station.

6.1.5 Road Safety

A Stage 1 Road Safety Audit has been undertaken for all of the proposed highway works for the Project. This is under a separate cover.

7. Summary

In Scenario A, O'Connell Street Station will facilitate approximately 18,300 passenger movements over the 12hr peak period (07:00-19:00) in 2035, rising to over 24,000 in 2050 and 30,600 in 2065. In Scenario B, O'Connell Street Station will facilitate approximately 16,100 passenger movements over the 12hr peak period (07:00-19:00) in 2035, rising to over 22,300 in 2050 and 25,700 in 2065.

The main catchment origins and destinations of the people boarding and alighting at the O'Connell Street Station include:

- Interchange with the LUAS
- Origins from residential area at Mountjoy Square;
- Origins from Connolly Rail Station;
- Destinations at Rotunda Hospital;
- Destinations along Henry Street and North Earl and Talbot Streets and,
- Destinations at Connolly Train Station.

The Project will result in increases in public transport mode share of between 1-5 percentage points in most zones surrounding O'Connell Street Station, in the AM period for both Scenario A and Scenario B, by 2065. Conversely, there will be a reduction in car mode share of up to between 1-5 percentage points in most zones surrounding the station, for both scenarios, by 2065.

The proposed Project will result in improvements to the public transport journey times for people in the area. In Scenario A, public transport journeys from O'Connell Street to Swords Pavilion will see an estimated time savings of approximately 23 minutes in 2065 AM period; and from O'Connell Street to the Airport, time savings of approximately 20 minutes in 2065 AM period. In Scenario B, public transport journeys from O'Connell Street to Swords Pavilion will see an estimated time savings of approximately 19 minutes in 2065 AM period; and from O'Connell Street to the Airport, time savings of approximately 24 minutes in 2065 AM period.

The station will not provide for any additional cycle parking, due to existing Dublin Bike provisions and other DCC cycle parking in the area. Overall, with the exception of a section of Parnell Street, the local station area is confirmed as retaining acceptable pedestrian comfort levels for the full range of demand and development scenarios.

In overall terms, O'Connell Street Station will provide for improvements to the public transport network resulting in decreased private car usage/trips and increased public transport usage, and will facilitate walking and cycling to the station, without significantly impacting on the operation of the road network in the area.

Contents

1. Introduction

1.1 Background

Jacobs/IDOM has been commissioned to undertake the Environmental Impact Assessment Report (EIAR) in support of the proposed Dublin MetroLink project (hereafter referred to as the proposed Project). The EIAR is being prepared to assess the environmental impacts of the proposed Project, including in relation to traffic and transport.

This Traffic and Transportation Assessment (TTA) assesses the operational impacts associated with the proposed Tara Street Station on the traffic and transport network in the local area. TTA's have been prepared for each individual station as well as an overall TTA for the proposed Project.

Jacobs/IDOM has also been commissioned to undertake a scheme traffic management plan (STMP). The STMP is a standalone report within the EIAR. The STMP assesses the impact of the construction of the Project on all road users and proposes mitigation measures where appropriate.

A summary of the TTAs and STMP will be included within the Traffic and Transportation chapter of the EIAR.

1.2 Assessment Scenarios

In order to provide a rounded assessment of the proposed Project, its impacts have been reviewed for a range of future years, and in the context of two alternative future scenarios. The forecast years are 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). As outlined in Table 1.1, Scenario A includes the proposed Project and committed transport schemes only, while Scenario B includes a range of further planned schemes depending on the forecast year.

Table 1.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project.
Do Minimum Scenario	Committed transport schemes in the absence of the Project.
Do Something - Scenario A	Scenario with the Project and committed transport schemes only.
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for Opening year (2035) and planned schemes under the Transport Strategy for the GDA for the Design Year (2050) and the Forecast Year (2065).

Committed transport schemes in the Do Minimum scenario and in Scenario A, that have been progressed through planning and are either under construction or are programmed into the capital expenditure budget, include, but are not limited to:

- Luas Green Line Capacity Enhancement – Phase 1;
- BusConnects Dublin Area Network Redesign services; and

- BusConnects Fares and Ticketing.

Scenario B represents the likely future receiving environment and is based on the delivery of the schemes identified within the National Development Plan for 2035, and on the implementation of the NTA's Greater Dublin Area (GDA) Transport Strategy for 2050 and 2065. As such, this scenario considers the cumulative impacts of interactions between other projects that are most likely to impact on transport movements in the area. Schemes included in this scenario are, but are not limited to:

- Luas Green Line Capacity Enhancement - Phase 2;
- Luas Finglas;
- Luas Lucan;
- BusConnects Core Bus Corridors (planned 16 corridors); and
- DART+.

More information on each modelled scenario is available in the Transport Modelling Plan (Appendix A9.3).

1.3 Project Overview

The proposed Project will be a high-capacity, high frequency rail line running from Swords to Charlemont, linking Dublin Airport, Irish Rail, the Dublin Area Rapid Transit (DART), Dublin Bus and Luas services, improving integration across public transport network in the Greater Dublin Area (GDA).

As well as linking major transport hubs, the proposed Project will connect key destinations including Swords, Ballymun, the Mater Hospital, the Rotunda, Dublin City University and Trinity College with much of the 19-kilometre route running underground.

When operations commence, there will be trains every 3 minutes during peak periods. This can rise to a service every 90 seconds, with the system capable of carrying a peak line flow of 20,000 passengers per hour in each direction.

1.3.1 Tara Street Station

Tara Street Station will be located alongside the DART railway line, aligned in a north-west to south-east direction. The station box is constrained by Poolbeg and Townsend Street and has been designed to fit into this space. The north-west end of the station box lies between the junction of Tara Street and Poolbeg Street, the alignment crosses Luke Street, and the south-east end is confined by Townsend Street. The location of Tara Street Station is shown below in Figure 1.1.

Tara Station has two entrances to cater for the large number of commuters at this strategic location, one at the north-west end onto Tara Street and one at the south-east end onto Townsend Street.

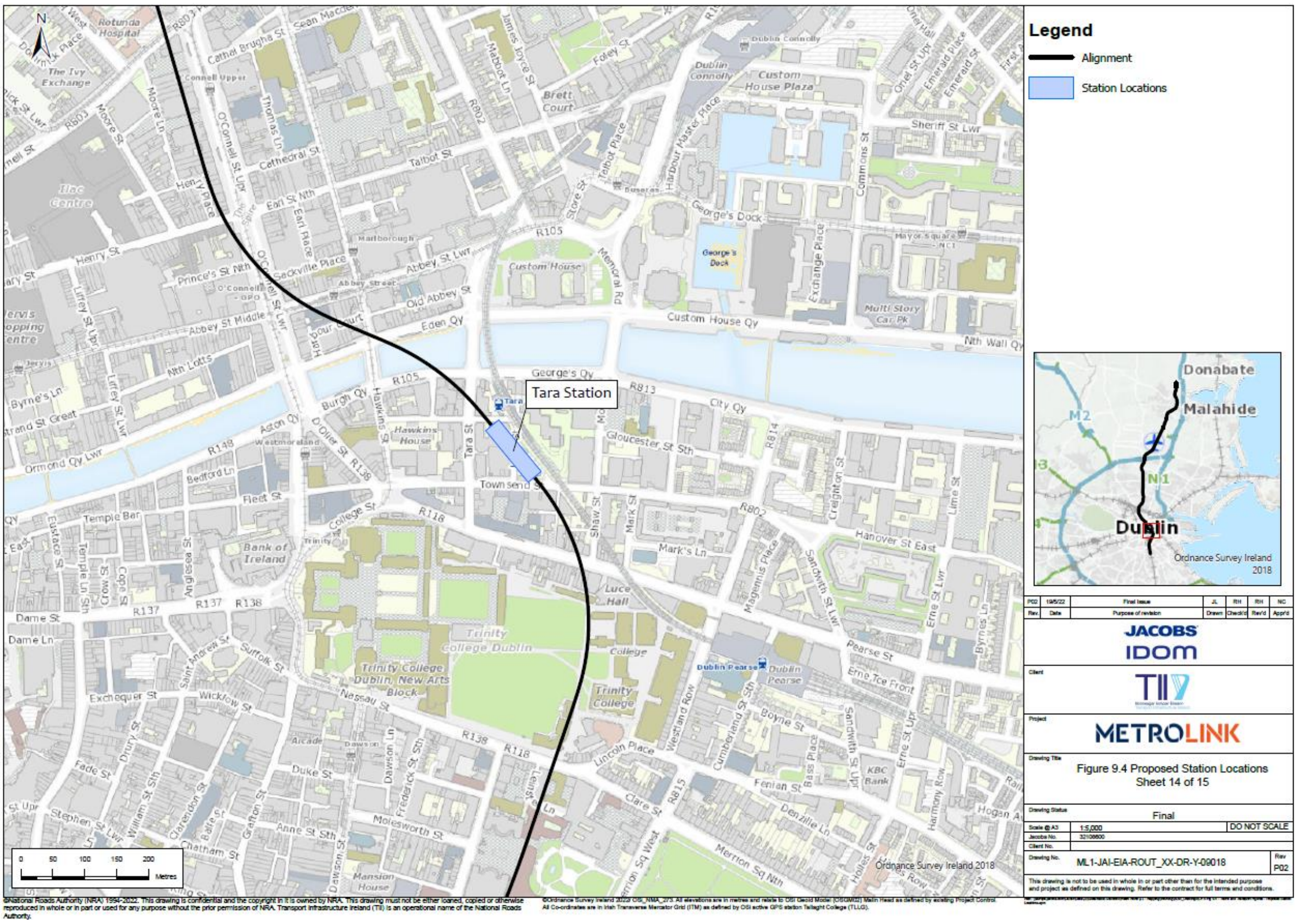


Figure 1.1: Proposed Station Location of Tara Street Station

2. Policy Context

Reference should be made to the Chapter 3 of the Overall Project TTA and Planning Policy Report (ML1-JAI-PLD-ROUT_XX-RP-Y-00020) for further detail on the overall project in relation to key national and regional policies.

This section will focus on an assessment of the Tara Street Station proposals in relation to the following key local policies:

- George's Quay Local Area Plan

The National Spatial Strategy states that in order to promote sustainable development, it is essential to consolidate the physical growth of Dublin City. This should be supported by effective land use policies for the urban area which underpin increased investment in high quality public transport infrastructure. It outlines a number of requirements that are key to creating a compact and economically vibrant city including;

- The effective integration of land use and transportation policy; and
- Facilitating the movement of people and goods through an effective public transport system.

The Regional Planning Guidelines promote the consolidation of development within the metropolitan area, and the achievement of sustainable densities in tandem with a much-enhanced multi-modal transport system.

The Transport Strategy for the Greater Dublin Area 2016-2035 and the Regional Planning Guidelines are required under legislation to be consistent with each other, and therefore the purpose of the Strategy is "to contribute to the economic, social and cultural progress of the Greater Dublin Area by providing for the efficient, effective and sustainable movement of people and goods." The Strategy sets out the necessary transport provision for the period up to 2035, to achieve this objective for the region, including the provision of the Project.

2.1 George's Quay Local Area Plan

The proposed Tara Street Station is located within the George's Quay Local Area Plan (LAP) area, as part of the Dublin City Council Development Plan 2016-2022. The LAP aims to establish good permeability throughout the LAP area, making it a great place to live, work and visit.

Developments within the LAP area should seek to establish and/or enhance the network of pedestrian and cycle routes throughout the George's Quay LAP.

The overarching theme of the LAP is "*To deliver a quality movement infrastructure which prioritises public transport, walking and cycling, which manages an appropriate role for the private car and which underpins the livelihood and liveability of the George's Quay area and the city*."

The plan objectives therefore seek to;

- Reduce the speed differential between pedestrians, cyclists and vehicles through expansion of the city centre 30km/h zone.
- Improve general pedestrian infrastructure and priority at key crossing points and along priority routes.
- Improve and provide cycling infrastructure in line with the emerging citywide strategic cycle network along priority routes and in accordance with the Department of Transport's 'National Cycle Policy Framework'.

Objective 6 of the George's Quay LAP seeks to develop the Townsend Street route as an attractive and comfortable pedestrian and cycling route from Temple Bar to Grand Canal Dock.

The relevant movement and access policies for the George's Quay LAP includes:

- To support proposals for high quality private cycle parking facilities/clubs in close proximity to Tara Street Station.
- To require Travel Plans and Transport Assessments for all relevant new developments and/or extensions or alterations to existing developments.
- The quantity of car parking proposed for significant commercial development sites shall be significantly limited reflecting the highly accessible nature of the area via public transport.

The relevant movement and access objectives for the George's Quay LAP includes:

- To implement pedestrian infrastructure improvements to priority routes including pedestrian priority measures and additional and enhanced crossing facilities.
- To promote the campshires and Townsend Street as priority pedestrian routes providing connectivity between the city centre/retail core and the emerging cultural destination of Grand Canal Dock.
- To require minimum footpath widths of 5.5 metres to Tara Street and 3 metres to Poolbeg Street to provide for an improved public realm and enhanced pedestrian circulation at Tara Street Station.
- To seek, as part of an overall integrated City Centre Transport Strategy, the completion of a series of cycle infrastructure improvements for the Georges Quay area.

The Dublin City Development Plan and Dublin City Centre Transport Study outline strategic pedestrian routes within Dublin City Centre. These routes, which include Townsend Street and Poolbeg Street, are envisaged to become streets where pedestrian movement and activity are prioritised.

The Heavy Good Vehicles (HGV) Management Strategy created restrictions on the movement of HGV's with 5 or more axles within the city centre. During the hours of 07.00 – 19.00, seven days a week, HGV's with 5 or more axles are not allowed to enter the restricted zone without having a permit. HGV's with 4 axles or less can enter the restricted zone at any time, but must follow specific designated routes, Tara Street and Pearse Street all form part of these designated routes.

The Dublin City Centre cycle parking strategy recommends the development of new and the expansion of existing on-street sites in order of ranking and targeting specific locations based on "real time" demand. It further recommends the expansion of sites with latent capacity as demand increases.

2.2 Draft Dublin City Council Development Plan 2022-2028

Building on the objectives of the Dublin City Council Development Plan 2016-2022, the Draft Dublin City Council Development Plan 2022-2028 recognises the opportunities presented by MetroLink to achieve effective integration of land-use and transportation in the area.

SMT20: Key Sustainable Transport Projects:

- To support the expeditious delivery of key sustainable transport projects including MetroLink, BusConnects, DART+ and Luas Expansion Programme so as to provide an integrated public transport network with efficient interchange between transport modes, serving the existing and future needs of the city and region.

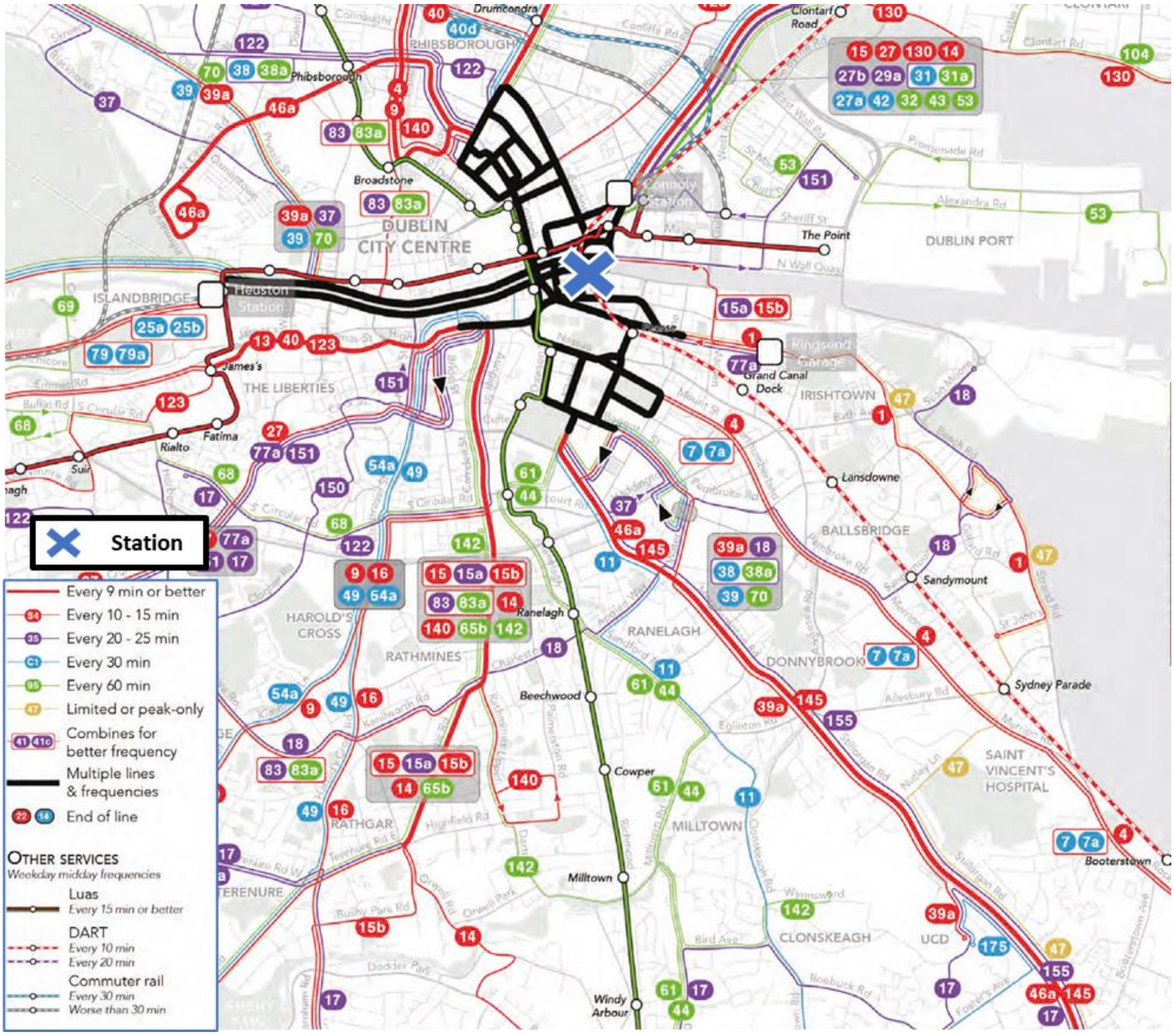
In addition, the Draft Plan highlights the role the proposed Project will play in delivering opportunities for developing the public ream around proposed stations.

3. Baseline Conditions

This section describes the existing receiving environment within the vicinity of the Tara Street Station and the wider environs, and identifies the future receiving environment for all modes of transport if conditions are planned to change in advance of the construction of the Project, such as the delivery of other proposed infrastructure projects.

3.1 Existing Public Transport Network

Figure 3.1 shows the existing bus services in the area surrounding area. The area surrounding Tara Street Station is served by several bus services with multiple lines at multiple frequencies, many of which have bus stops in close proximity to the station. Within a 600m buffer from the station, there are more than 30 bus stops located along the R118, Westmoreland Street, Nassau Street, Eden Quay and Burgh Quay. The nearest bus stop is on Poolbeg Street, serving routes 47 (from Poolbeg Street to Belarmine), 65 (from Poolbeg Street towards Blessington/Ballymore) and 65b (from Poolbeg Street towards Citywest). These are the existing bus stops and existing bus services; the location of the bus stops is currently being reviewed by the NTA as part of the Bus Network Redesign proposals.



(Base Source: www.busconnects.ie)

Figure 3.1: Existing bus network around Tara Street Station

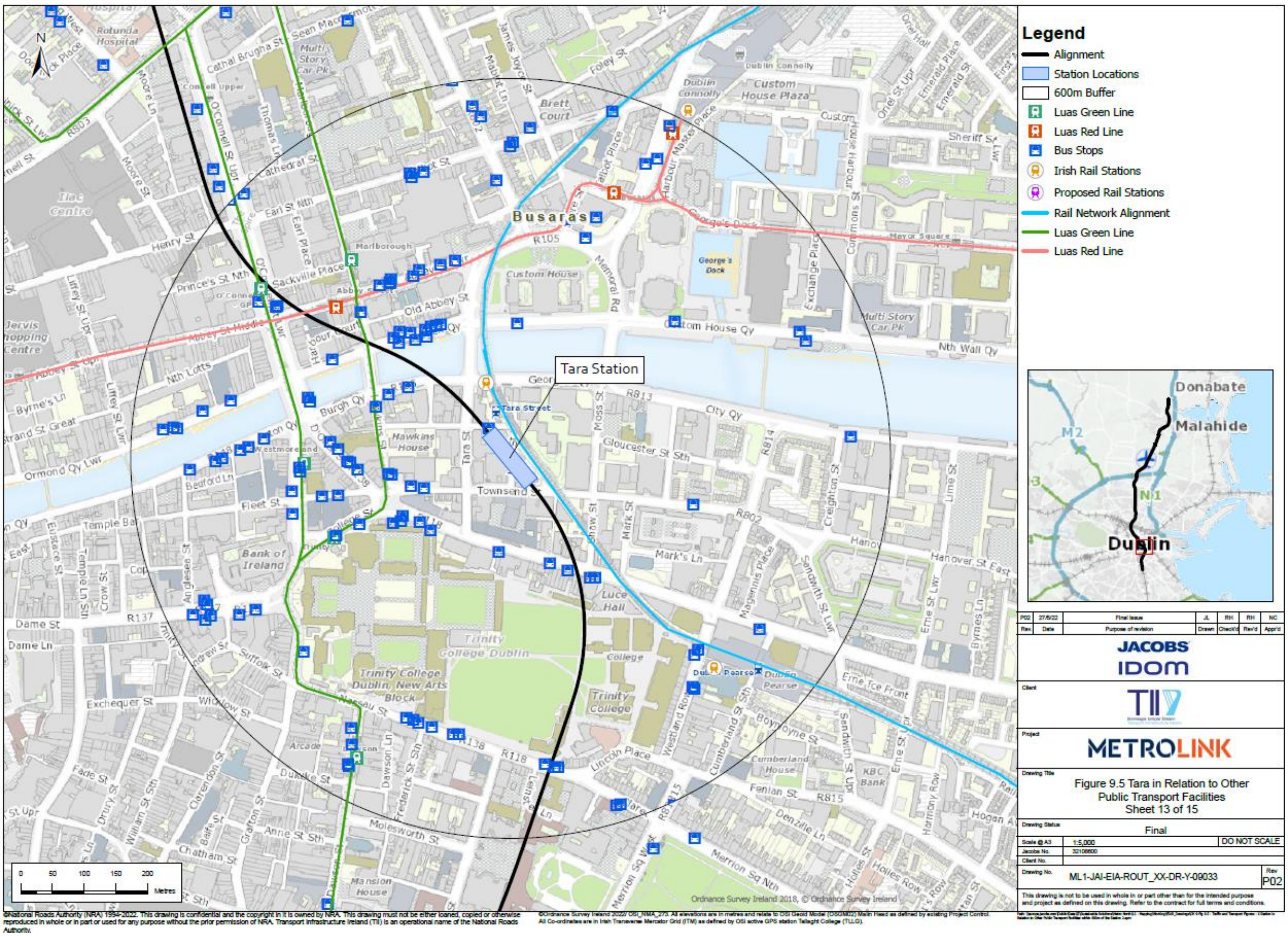
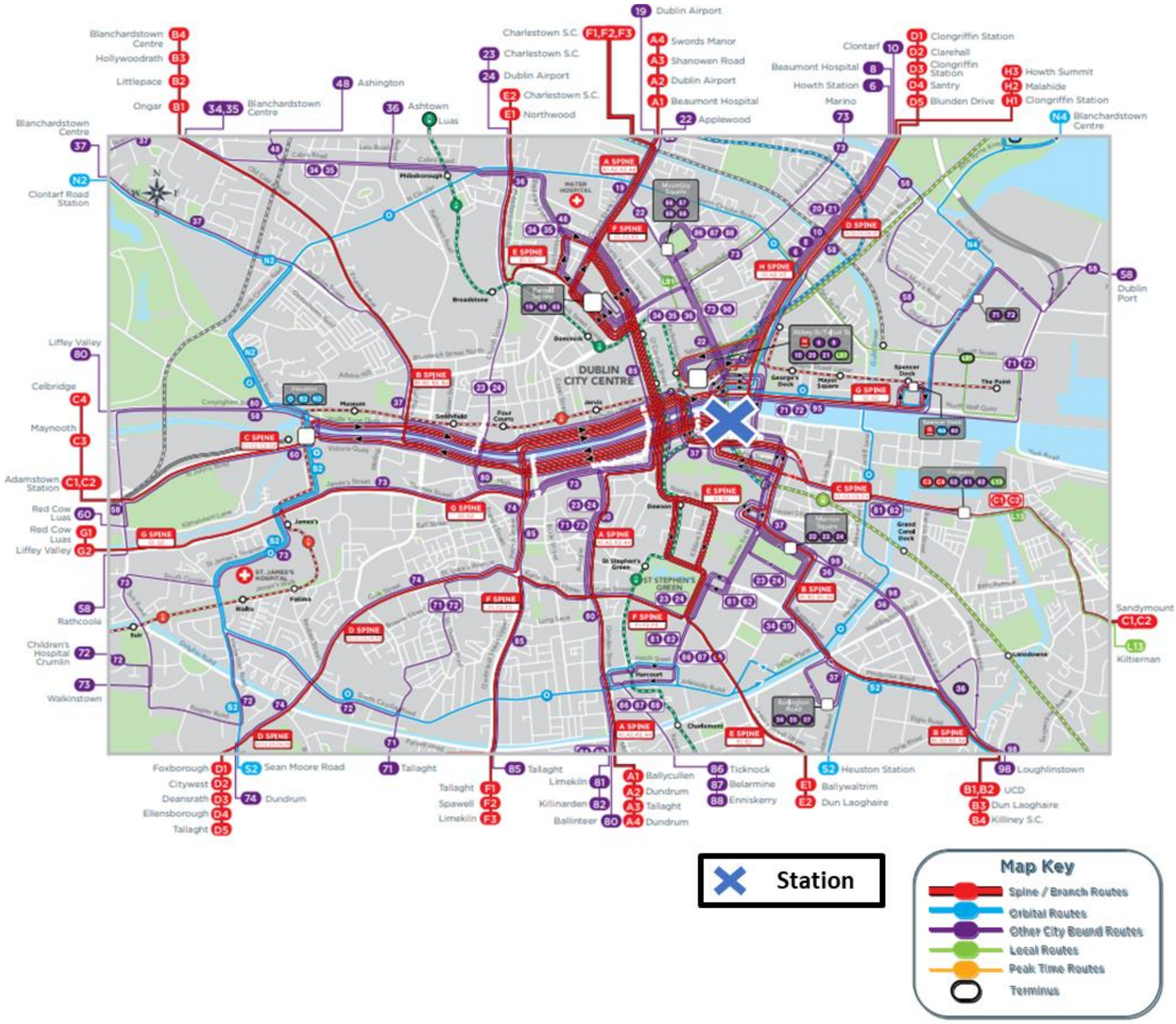


Figure 3.2: Transport facilities within 600m buffer from Tara Street Station

3.2 Future Receiving Environment – Public Transport Network

Tara Street Station is located near the Bus Network Redesign proposed spines B, C, D and G shown in Figure 3.3. Bus Network Redesign Spines B and D will both have frequencies of one bus every 5mins or less during weekdays and most of the weekends. Spines C and G will have frequencies from 6mins to 8mins during weekdays and every 10mins during weekends. Tara Street Station is also located in close proximity to several other city bound bus routes.



(Base Source: www.busconnects.ie)

Figure 3.3: Proposed Bus Network Redesign around Tara Street Station

3.3 Existing Road Network

Tara Street is a one-way traffic route linking Pearse Street to the north of Dublin City Centre across the River Liffey. At is closest section to the station, Tara Street is around 9.5m wide and has three traffic lanes with no bus lanes. Townsend Street is a one-way street of approximately 6.5m width and with two traffic lanes that takes traffic from the west to the east through the area. The R105 Burgh Quay is a one-way single carriage way of approximately 10.5m width, with two traffic lanes, a bus lane and an advisory cycle lane.

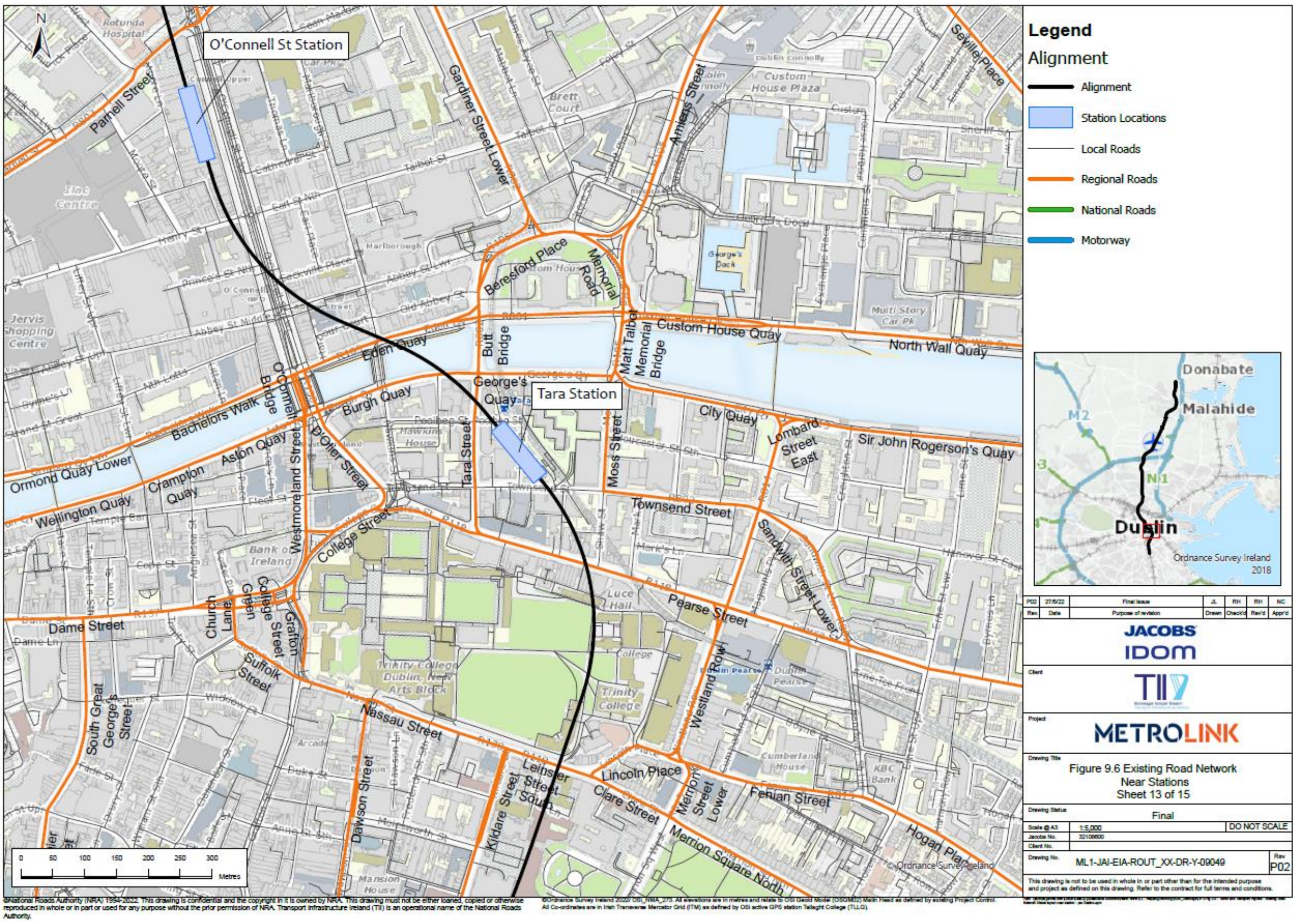


Figure 3.4: Street layout near Tara Street Station

3.3.1 Junction Turning Count Locations

The Data Collection Report (ML1-JAI-TRA-ROUT_XX-RP-Y-00023) details the methodology and specification of traffic surveys undertaken for the proposed Project. The survey locations relevant to Tara Street Station are shown in Table 3.1. Vehicle classifications used for the survey were Car, LGV, OGV1, OGV2, PSV, Motorcycle and Pedal Cycle. PCUs values were also reported using appropriate conversion factors for each vehicle classification. The resulting PCU values from the survey results have been used for the LinSig modelling.

Table 3.1: Survey Locations Around Tara Street Station

Junction	Type of Survey
Tara Street/George's Quay	Classified junction turning counts (CJTC)
Tara Street / Poolbeg Street	CJTC
Tara Street/Townsend Street	CJTC
Tara Street/Pearse Street	CJTC

3.3.2 Base Traffic Flows

The 2018 base traffic flows for the AM and PM peak periods, for the junctions detailed in Table 3.1, are provided within Appendix A Traffic Flow Diagrams. The surveyed base traffic flows have also been utilised as traffic demand inputs for the VisWalk pedestrian modelling.

3.3.2.1 Tara Street / St George's Quay

Table 3.2 below summarises the 2018 AM and PM peak results for the R802/Tara Street/R105 signalised junction.

Table 3.2: LinSig Model Result Summary_2018 Base Traffic Flows– Tara Street / St George's Quay Signalised Junction

Arm	Lane	2018 AM Peak		2018 PM Peak	
		Degree of Saturation (%)	Mean Maximum Queue	Degree of Saturation (%)	Mean Maximum Queue
Tara Street Northbound	Left	39.1	7.0	40.4	6.3
	Ahead	15.2	0.3	21.5	2.2
	Ahead	44.8	1.0	50.2	2.2
	Ahead	11.8	1.3	30.6	1.8
George's Quay	Ahead	28.1	3.3	33.4	4.3
	Ahead	31.1	4.0	35.9	4.9
	Right / Ahead	27.4	3.2	33.8	4.3
Practical Reserved Capacity (%)		**100.9**		**79.4**	
Total Delay (pcuHr)		**6.63**		**9.06**	

The analysis indicates that this junction operates within capacity during the base scenarios, with minimal levels of queuing and delay.

3.3.2.2 Tara Street/Poolbeg Street Signalised Junction

Table 3.3 below summarises the 2018 AM and PM peak results for the Tara Street/Poolbeg signalised junction.

Table 3.3: LinSig Model Result Summary_2018 Base Traffic Flows– Tara Street / Poolbeg Street Signalised Junction

Arm	Lane	2018 AM Peak		2018 PM Peak	
		Degree of Saturation (%)	Mean Maximum Queue	Degree of Saturation (%)	Mean Maximum Queue
Tara Street	Ahead Left	40.9	7.4	47.1	8.0
	Ahead	39.7	0.4	43.4	0.5
	Ahead	10.3	1.1	26.1	0.7
Poolbeg Street	Ahead	0.0	0.0	0.0	0.0
	Right	0.0	0.0	0.0	0.0
Practical Reserved Capacity (%)		**120.2**		**91.1**	
Total Delay (pcuHr)		**0.96**		**1.20**	

The analysis indicates that this junction operates within capacity during the base scenarios, with minimal levels of queuing and delay.

3.3.2.3 Tara Street/Townsend Street/Pearse Street Signalised Junction

Table 3.4 below summarises the 2018 AM and PM peak results for the Tara Street/Townsend Street/Pearse Street signalised junction.

Table 3.4: LinSig Model Result Summary_2018 Base Traffic Flows– Tara Street / Townsend Street / Pearse Street Signalised Junction

Arm	Lane	2018 AM Peak		2018 PM Peak	
		Degree of Saturation (%)	Mean Maximum Queue	Degree of Saturation (%)	Mean Maximum Queue
Tara Street Northbound	Ahead	47.4	8.2	50.8	8.7
	Ahead	45.4	6.9	48.5	5.9
	Ahead Right	23.7	4.0	37.4	7.6
Townsend Street West	Left / Ahead	52.6	7.3	33.1	3.6
	Ahead	56.4	8.8	41.9	5.9
R802 Pearse Street	Ahead	14.9	1.9	20.2	2.7
	Right / Ahead	16.3	2.0	22.0	3.0
	Right	72.4	19.0	77.3	22.1
	Right	16.0	1.8	29.4	3.9
Practical Reserved Capacity (%)		**24.3**		**16.5**	
Total Delay (pcuHr)		**13.88**		**13.70**	

The analysis indicates that this junction operates within capacity during the base scenarios, with minimal levels of queuing and delay.

3.3.3 Forecast Traffic Growth

Forecast traffic growth rates have been obtained from the Eastern Regional Model (ERM) for future years 2035, 2050, and 2065, for the appropriate scenario.

3.4 Future Receiving Environment – Road Network

The immediate road network surrounding Tara Street Station will remain unchanged. Any future changes to the street layout are associated with the proposed Project itself.

3.5 Existing Pedestrian Network

The external footway network is well established, with footways provided alongside principal roads. The footways on George's Quay, near the proposed DART station entrance, are approximately 2m in width. This increases to over 7m in width to the east of the overhead railway line, with street furniture present. Under DCC’s pedestrian hierarchy, George’s Quay is part of the ‘Civic Spine and Liffey Corridor’, with Tara Street designated as a ‘Linking Route’.

Pedestrian crossing facilities are provided at the Tara Street/George's Quay signalised junction. However, at the Tara Street/Poolbeg Street junction, Moss Street/Townsend junction and Pearse Street/Shaw Street, pedestrian crossings are only provided on two sides of the junction.

3.5.1 Pedestrian Link Counts

The Data Collection Report (ML1-JAI-TRA-ROUT_XX-RP-Y-00023) details the locations around Tara Street Station where pedestrian surveys were undertaken.

3.5.2 Baseline Pedestrian Accessibility Review

A baseline accessibility assessment has been undertaken to establish existing walking provision relevant to the proposed Tara Street Station. Catchment maps prepared for the accessibility analysis for walking are based in two criteria, the average speed for each mode and the existing road network. Therefore, maps do not reflect existing access restrictions for private roads and motorised roads.

Figure 3.5 illustrates the 5 minutes, 10 minutes and 15 minutes pedestrian walking isochrones for the proposed Tara Street Station. Table 3.5 lists local amenities within the 5min walking, 10min walking and 15min walking from the Tara Street Station.

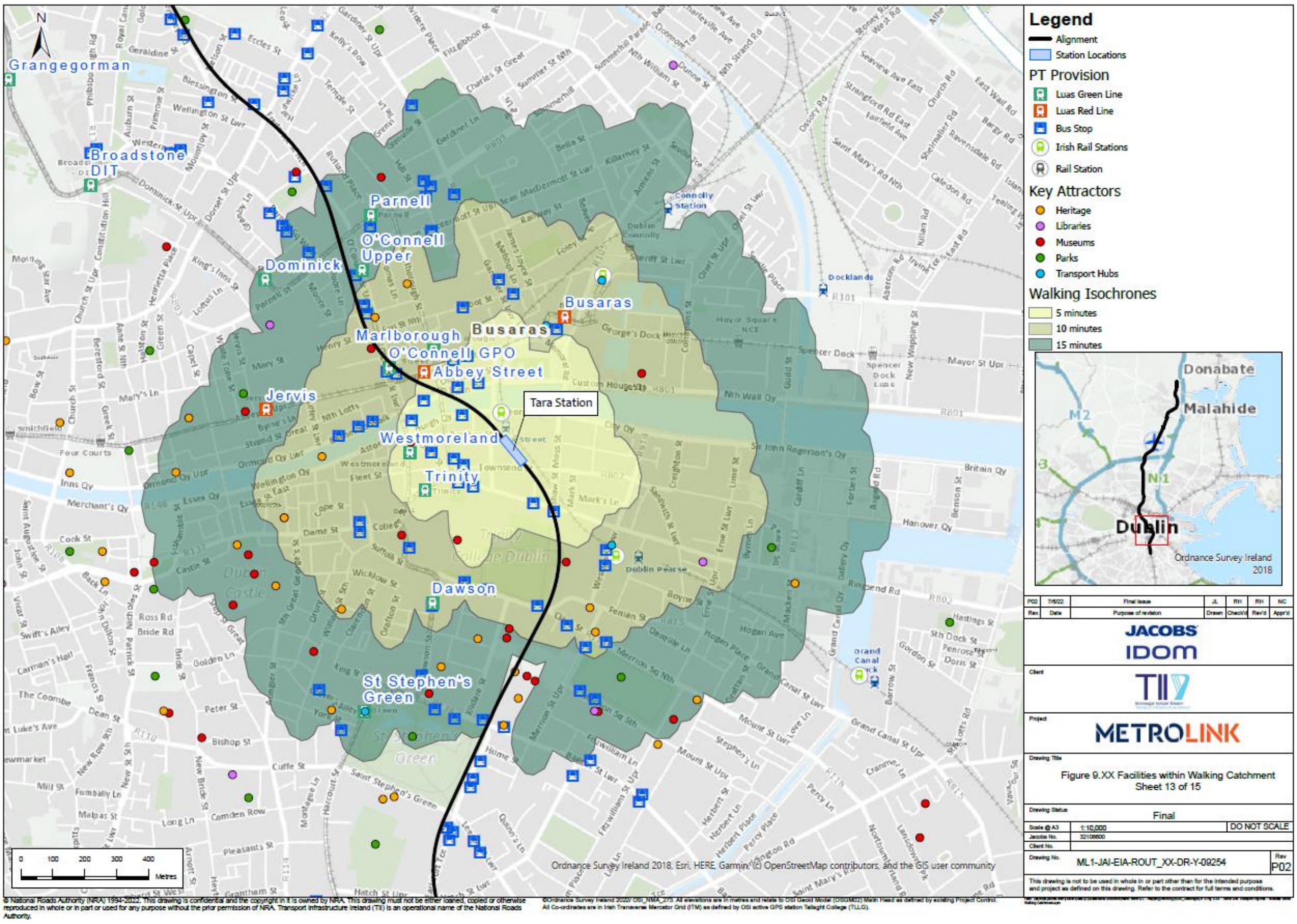


Figure 3.5: Pedestrian Walking Isochrones for Proposed Tara Street Station

Table 3.5 – Local facilities and amenities within Walking Catchment Area

Facilities within 5min walking	Facilities within 10min walking	Facilities within 15min walking
Tara train station	Busaras	Mountjoy Square Park
Various hotels, cafes and restaurants	Pearse train station	Conolly train station (Amiens Street)
Various banks and services (Bank of Ireland, AIB Bank, Garda Station)	Connolly train station	Dublin City Hospital
Various supermarkets (Tesco, Spar, Londis, etc)	Facilities along O'Connell Street	Rotunda Hospital
Trinity College	Custom House Quay (CHQ) and Irish Immigration Museum	Ilac Shopping Centre
Science Gallery Dublin	Various hotels, cafes, restaurants, banks and supermarkets	Jervis Shopping Centre
The Custom House	Trinity College Park	Garden of Remembrance
International Financial Services Centre (IFSC)	Dublin Dental University Hospital	City Hall
	National Gallery of Ireland	Dublin Castle
	Temple Bar	St. Stephens Green Park
	Grafton Street	Merrion Square Park
		Dublin Dental University Hospital
		Various hotels, cafes, restaurants, banks and supermarkets
		National Museum of Ireland
		National Library of Ireland
		National Maternity Hospital

A pedestrian comfort assessment has been undertaken to assess impact of the baseline volume of pedestrians on the network surrounding Tara Street Station, as shown in Figure 3.6. Links were assessed against DCC guidance in the first instance, and then against the TfL Pedestrian Comfort Calculator to determine the level of comfort for the available width. The full methodology adopted is detailed in the Overall Project TTA.

In the immediate surrounding to the proposed station the assessment shows that all the links comply with the DCC guidelines. The assessment further shows that the R138 West and George's Quay West between Tara Street and Luke Street falls below DCC guidance, however they are deemed to have an 'Acceptable' pedestrian comfort level. All other links meet DCC guidance and are deemed 'Comfortable'.

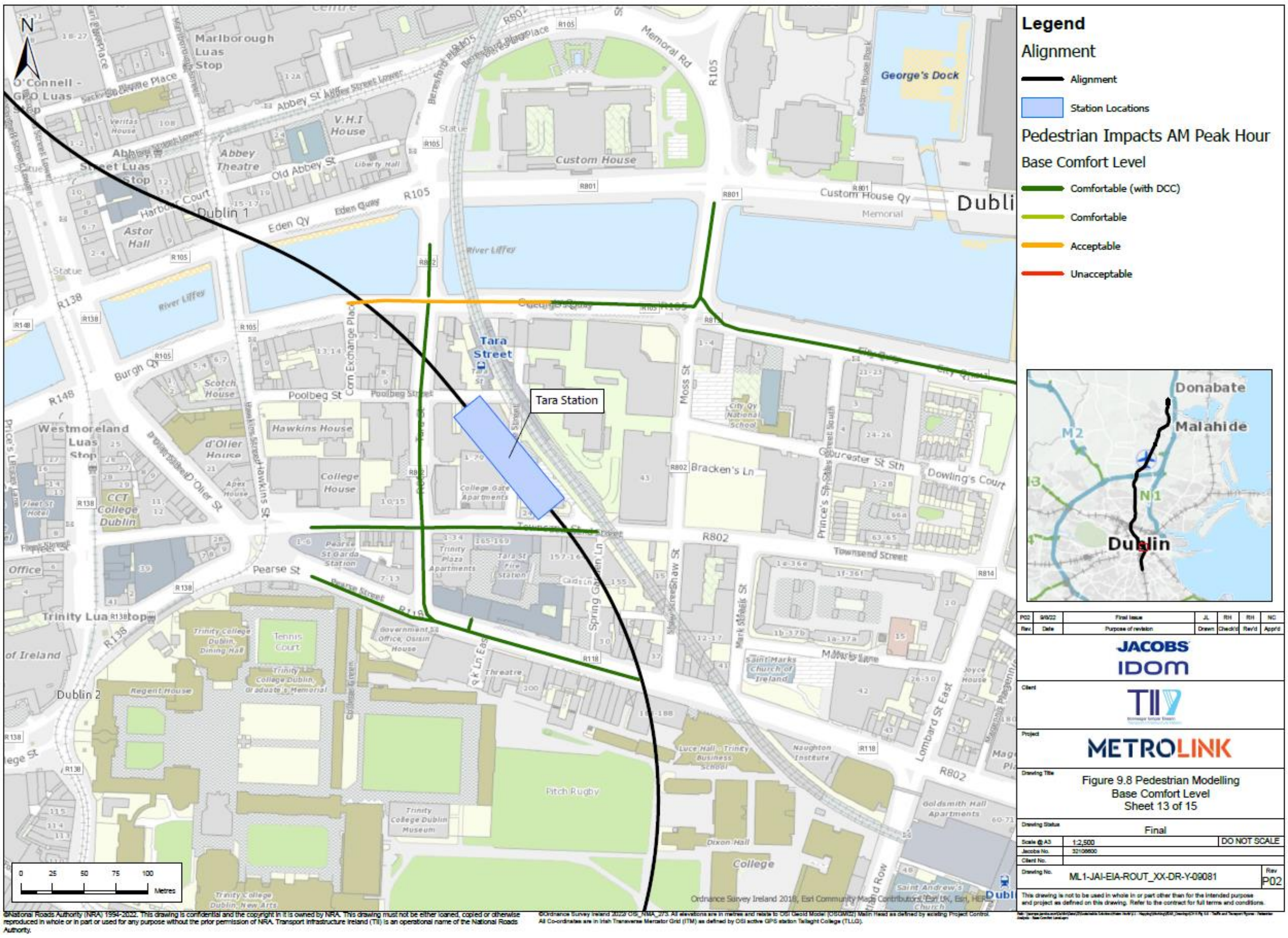


Figure 3.6: Pedestrian Comfort Assessment at Tara Street Station- Baseline

3.6 Future Receiving Environment – Pedestrian Network

The immediate pedestrian network surrounding Tara Street Station will remain unchanged. Any future changes to the street layout are associated with the proposed Project itself.

As part of the proposed Project, the future street level layout at Tara Street Station includes an extension of the existing footway on Poolbeg Street by approximately 1.5m to accommodate the station entrance. Poolbeg Street will also be a shared-use space for pedestrians, cyclists and vehicles, however minimal volumes of traffic are expected at this location. The pedestrian crossing on Tara Street will also be realigned to facilitate safe crossing of the large volume of passengers forecasted to utilise this station.

3.7 Existing Cycle Network

Figure 3.7 presents Tara Street Station within the GDA Cycle Network. Pearse Street and D'Olier Street are considered secondary routes within the network, with Talbot Memorial Bridge and City Quay contributing to the primary network. A Feeder route serves Trinity College.

Cycle lanes are provided for along the following streets, all of which are considered to be of high sensitivity for cyclists and Level B Quality of Service:

- The R105 between Moss Street and Corn Exchange Place;

- R105 Burgh Quay between Corn Exchange Place and D'Olier Street; and
- Pearse Street (combined bus and cycle lane).

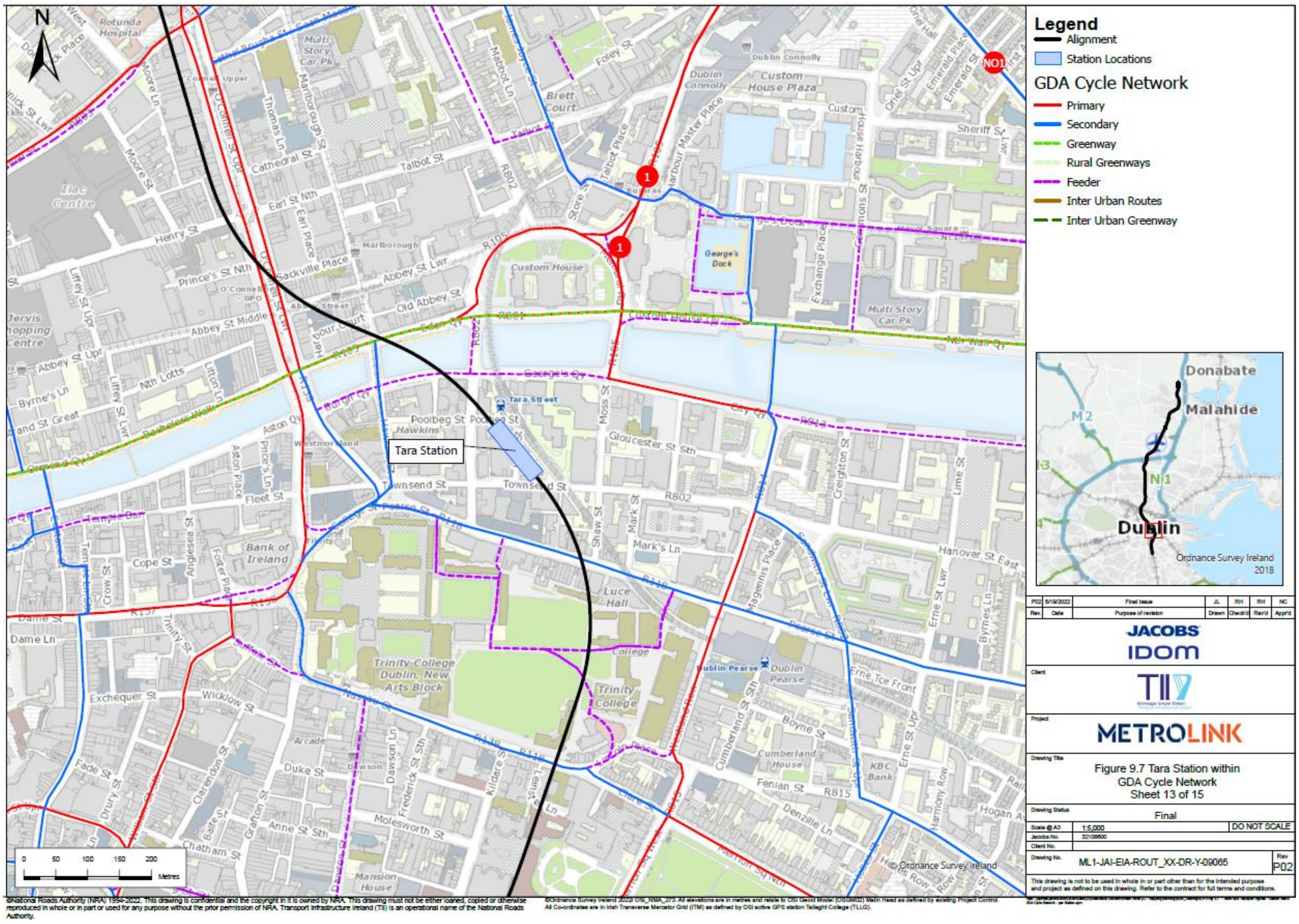


Figure 3.7: Proposed Tara Street Station Location Within GDA Cycle Network

3.7.1 Baseline Cycle Accessibility Review

A baseline accessibility assessment has been undertaken to establish existing cycling provision relevant to the proposed Tara Street Station. Catchment maps prepared for the accessibility analysis for cycling are based in two criteria, the average speed for each mode and the existing road network. Therefore, maps do not reflect existing access restrictions for private roads and motorised roads.

There are two Dublin Bikes bike stations in the proximity to the station with an offering of 40 docking spaces. DCC also has approximately 26 Sheffield bikes stands within the area. This figure also illustrates the 5 minutes, 10 minutes and 15 minutes cycling isochrones for the proposed Tara Street Station and the location of existing bike racks and Dublin Bike stations within 5min walking from the station.

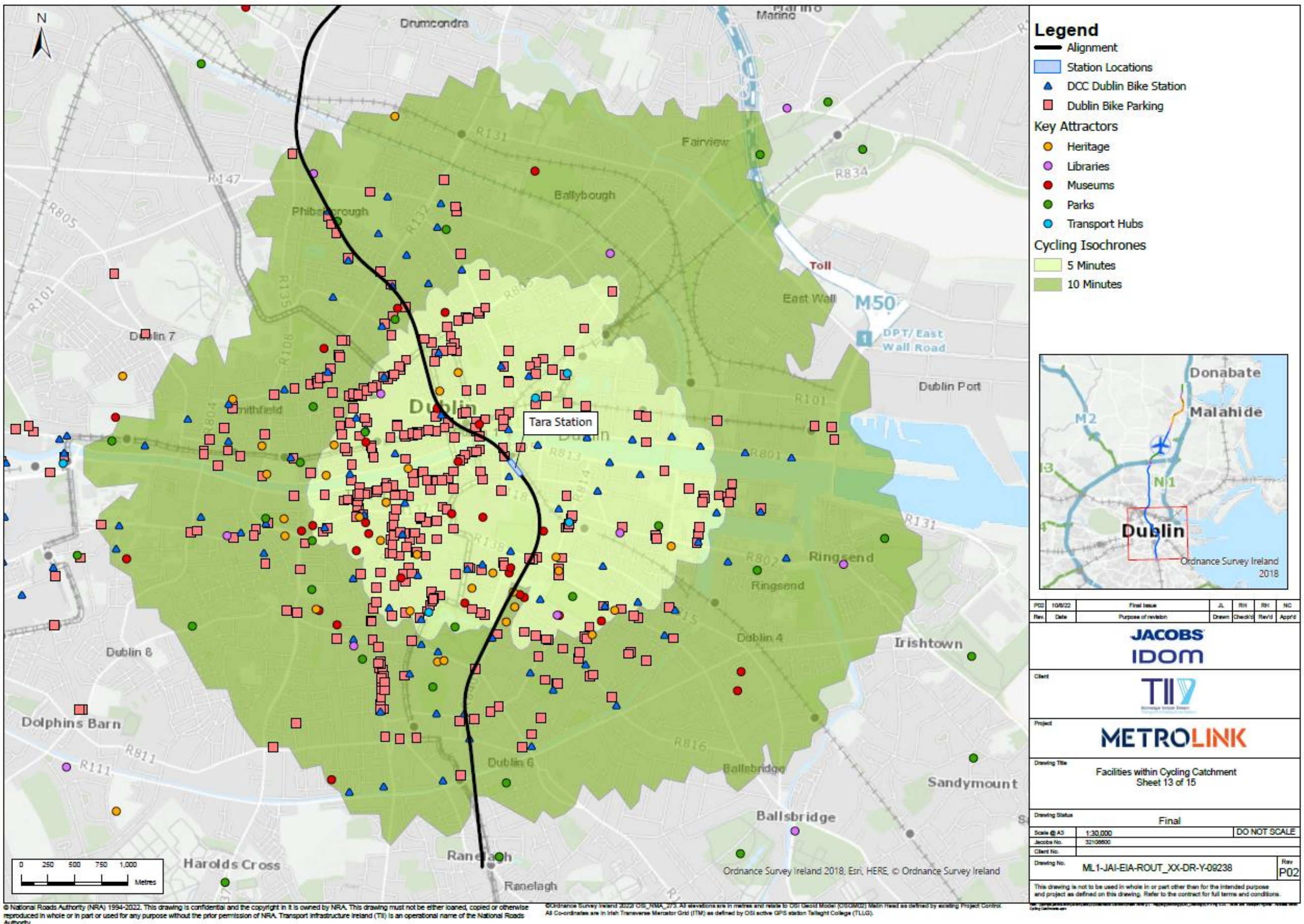


Figure 3.8: Tara Street Station Cycling Catchment Area

Table 3.6 lists facilities and amenities within 5min and 10min cycling from the proposed Tara Street Station.

Table 3.6: Local facilities and amenities within cycling catchment area

Facilities within 5min cycling	Facilities within 10min cycling
Mountjoy Square Park	Mater Hospital
Conolly train station (Amiens Street)	Drumcondra train station
Dublin City Hospital	Docklands train station
Rotunda Hospital	St. Patrick's Park
Ilac Shopping Centre	Fairview Park
Jervis Shopping Centre	Croke Park
Garden of Remembrance	Greyhound Stadium
City Hall	Aviva Stadium
Dublin Castle	Blessington Street Park (Phibsborough)
St. Stephens Green Park	DIT
Merrion Square Park	Dublin Institute of Technology (DIT)
Dublin Dental University Hospital	Technological University Dublin (TU Dublin)

Facilities within 5min cycling	Facilities within 10min cycling
Various hotels, cafes, restaurants, banks and supermarkets	Grand Canal Dock
National Museum of Ireland	Guinness Storehouse
National Library of Ireland	Merchants Quay
National Maternity Hospital	

3.8 Future Receiving Environment – Cycle Network

The immediate cycle network surrounding Tara Street Station will remain unchanged. Any future changes to the street layout are associated with the proposed Project itself.

As part of the proposed Project, the future street layout at Tara Street Station provides for a new two-way cycle link along Luke Street, as part of the shared-use space in this area, which will improve the provisions for cyclists in general.

There are 256 proposed bicycle parking stations proposed at Tara Street station, and 128 bicycle stands located between Tara Street station and Tara Dart Station.

4. The Proposed Project – Tara Street Station

4.1 Site Location and Development Context

The proposed Tara Street Station will be located underground to the east side of Tara Street between Townsend Street and Poolbeg Street encompassing Luke Street and parallel to the heavy rail station, as shown in Figure 4.1.

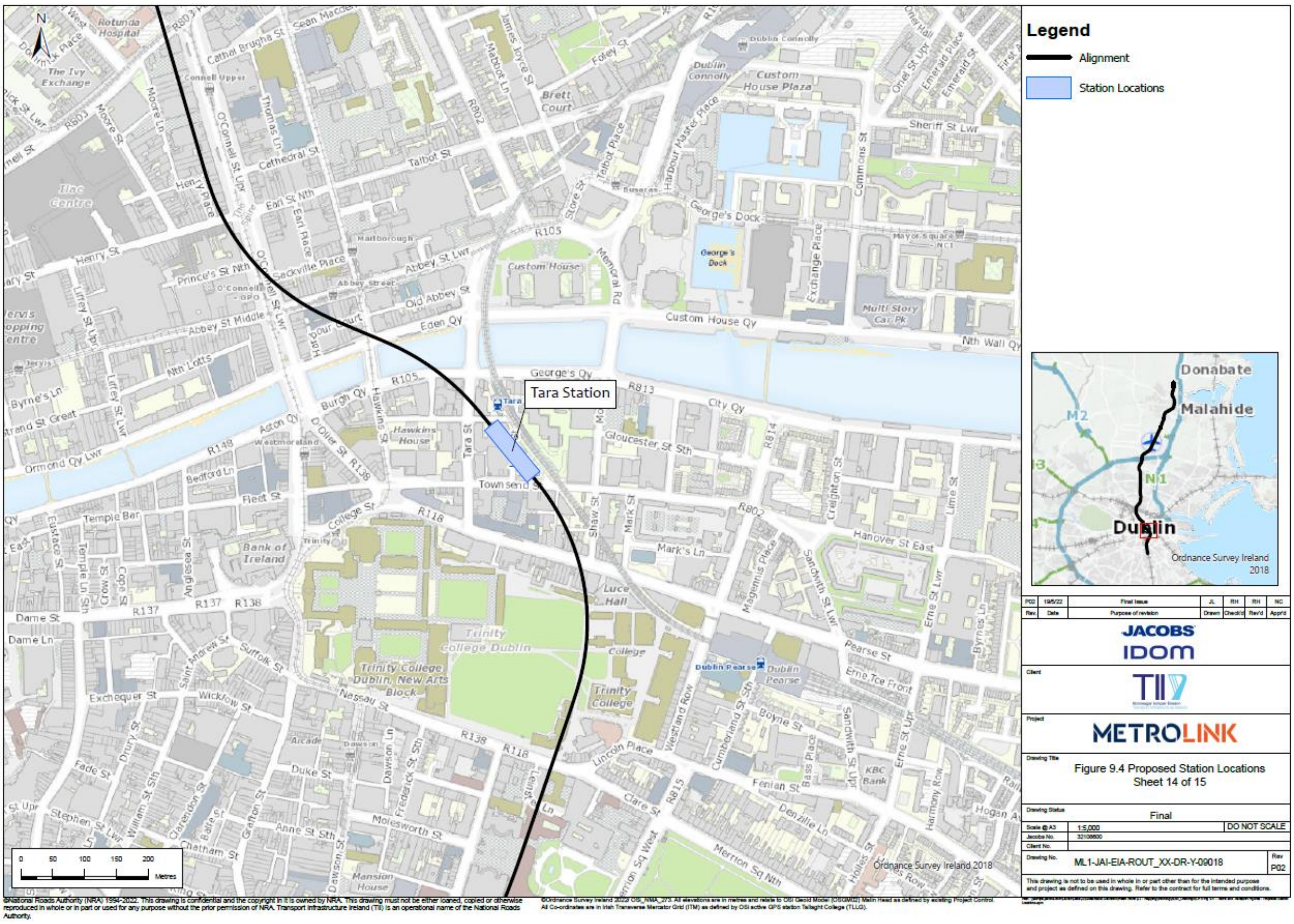


Figure 4.1: Proposed Site Location

Figure 4.2 illustrates the proposed layout for Tara Street Station, including improvements to pedestrian crossings, location of entrances and exits and bike parking area. There are two main entrances with stairs to the underground platform provided north and southeast of the station. These entrances can be accessed via the proposed footway provision on R802 and Townsend Street.

Townsend Street will be reduced to single lane traffic in the section fronting Tara Street southern entrance, east of the Dublin Fire Brigade Building to the DART railway line, to provide more space for pedestrian movements. A short section of Townsend Street between Tara Street and the Dublin Fire Brigade building will remain two-way to provide egress to and from the Dublin Fire Brigade Building in both directions.

As part of the proposed station and urban realm design, Luke Street will be converted into a shared space for cyclists and pedestrians, including provision of a two-way cycle track between its junctions with Poolbeg Street and Georges Quay. Poolbeg Street will be reduced to one lane to accommodate more space for pedestrian and cyclists.

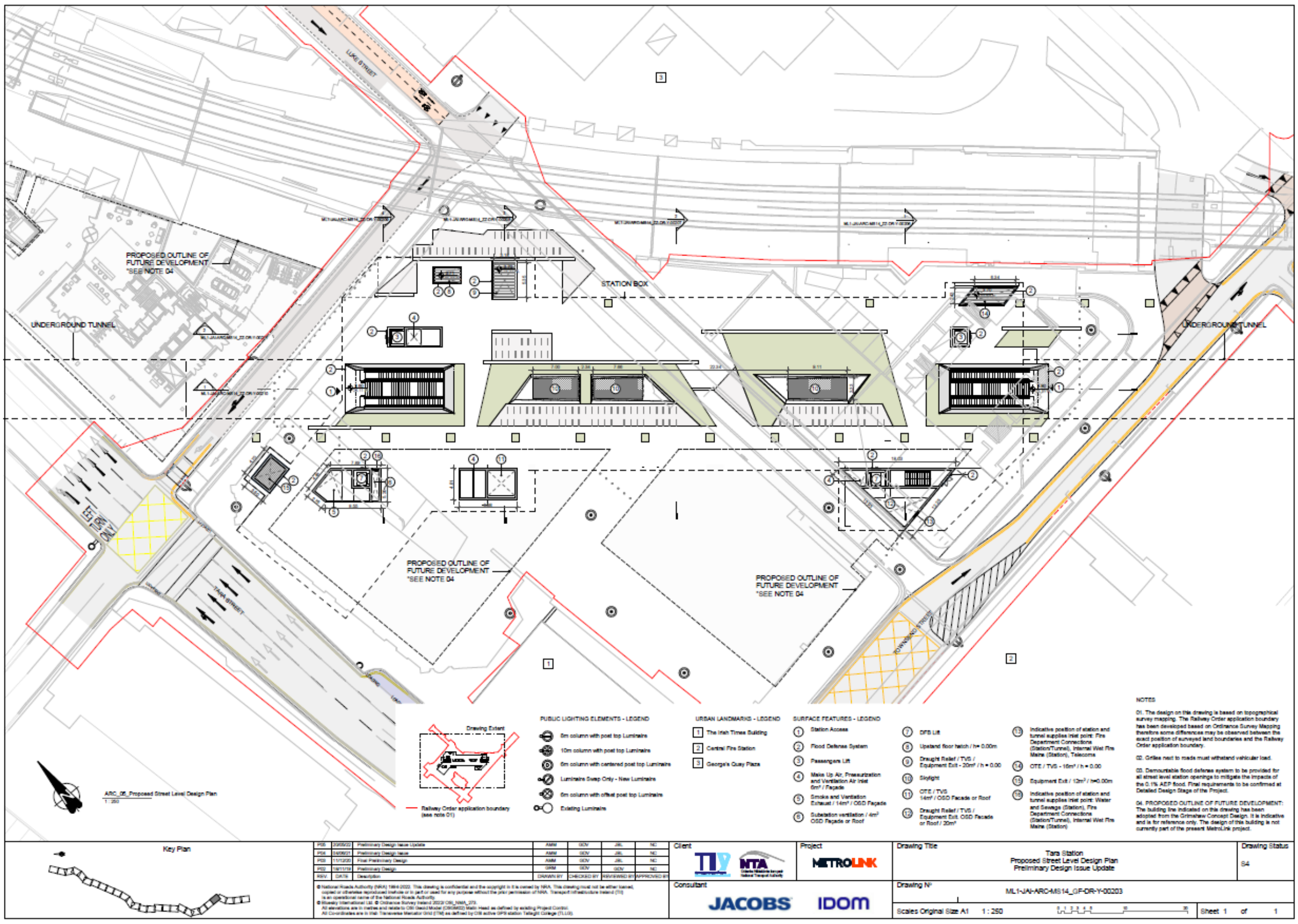


Figure 4.2: Tara Street Station Layout

5. Trip Generation / Trip Attraction

5.1 Operational Phase

Traffic estimates associated with the Tara Street Station Operational Phase have been established by utilising the National Transport Authority's (NTA) East Regional Model (ERM). The ERM provides a comprehensive representation of multi-modal travel patterns across the Greater Dublin Area and is a suitable tool for the testing and appraisal of the proposed Project.

5.1.1 Passenger Boarding and Alighting

Passenger demand modelling has been used to predict the numbers of passengers boarding and alighting at each station, and the resulting passenger load on the Project, for the years 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). The scenarios considered for assessment for each of the years 2035, 2050 and 2065 are outlines in Table 5.1.

Table 5.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project.
Do Minimum Scenario	Committed transport schemes in the absence of the Project.
Do Something - Scenario A	Scenario with the Project and committed transport schemes only.
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for Opening year (2035) and planned schemes under the Transport Strategy for the GDA for the Design Year (2050) and the Forecast Year (2065).

5.1.1.1 Boarding and Alighting Volumes

Table 5.2 to Table 5.9 show boarding, alighting and interchange numbers for the Tara Street Station at different peak periods along with the destination and origins of passengers in the AM Peak. All the data has been retrieved from the ERM developed by the NTA. Data in this section was obtained for the busiest hour within each of the following peak periods:

- AM: busiest hour between 07:00 – 10:00;
- LT (lunch time): busiest hour between 10:00 – 13:00;
- SR (school run): busiest hour between 13:00 – 16:00; and,
- PM: busiest hour between 16:00 – 19:00.

Figure 5.1 presents the volume of passengers boarding and alighting at Tara Street Station over the 12hr peak period (07:00-19:00) in both Scenario A and Scenario B. Scenario A is expected to have approximately 16,100 boarding passengers and 21,300 alighting passengers in 2035, rising to 26,500 boarding passengers and 33,900 alighting passengers in 2065. Scenario B is expected to have approximately 13,900 boarding passengers and 18,800 alighting passengers in 2035, rising to 23,400 boarding passengers and 29,900 alighting passengers in 2065.

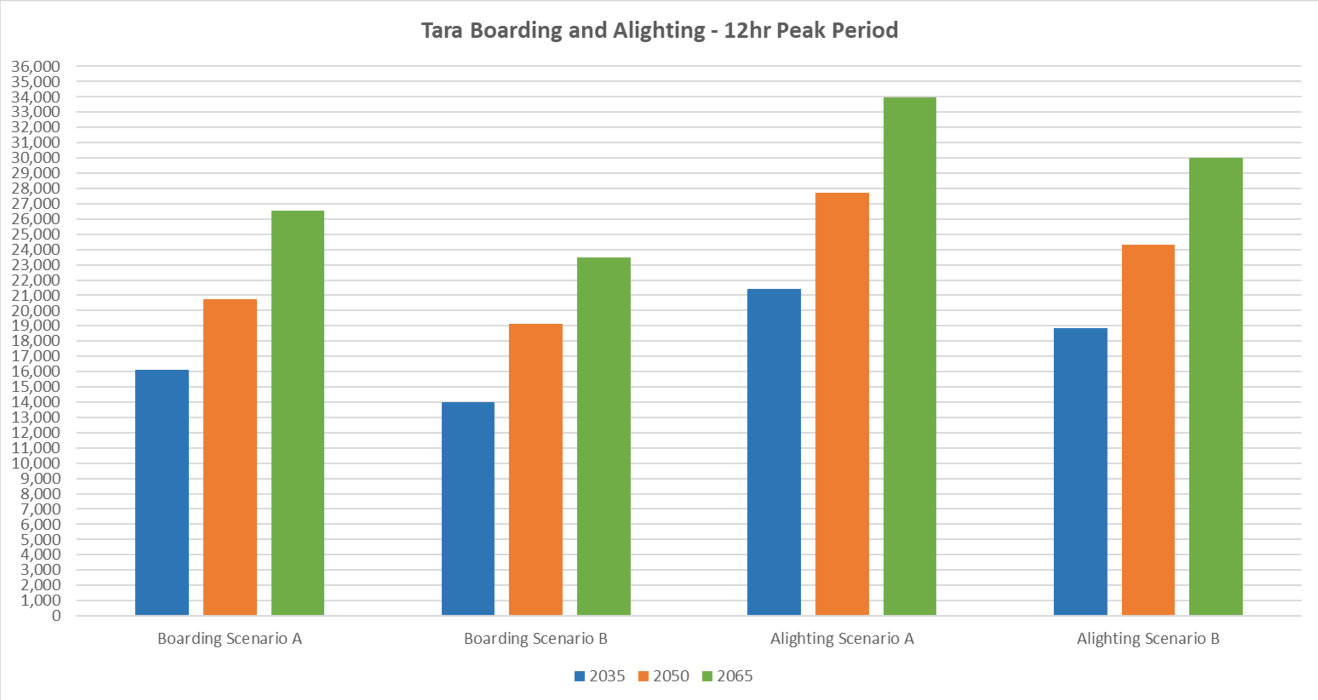


Figure 5.1: Tara Street 12hr Boarding and Alighting in Scenario A and Scenario B

5.1.2 Boarding and Alighting Volumes: Scenario A

Table 5.2 to Table 5.4 below highlight the boarding and alighting passenger numbers for Tara Street Station in Scenario A.

Table 5.2 shows the boarding and alighting passenger numbers during the Opening Year, 2035. In the AM peak hour, it is estimated that 1,461 northbound passengers will board, and 3,841 southbound passengers will alight. In the PM peak hour, it is estimated that 2,472 northbound passengers will board, and 1,525 southbound passengers will alight.

Table 5.2: Boarding and Alighting Numbers at Tara Street Station in 2035, Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	1,461	180	3,659	930	78	2,416	1,165	80	3,024	2,472	329	6,637
Southbound	193	3,841	5,587	52	1,344	1,691	48	1,383	1,629	107	1,525	1,954

Source: East Regional Model (ERM)

For the year 2050, in the AM peak hour, it is estimated that 1,853 northbound passengers will board, and 4,621 southbound passengers will alight. In the PM peak hour, it is estimated that 3,059 northbound passengers will board, and 1,960 southbound passengers will alight.

Table 5.3: Boarding and Alighting Numbers at Tara Street Station in 2050, Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	1,853	213	4,384	1,379	93	3,346	1,464	93	3,685	3,059	371	8,069
Southbound	243	4,621	6,514	62	2,046	2,309	59	1,853	2,007	123	1,960	2,312

Source: East Regional Model (ERM)

For the year 2065, in the AM peak hour, it is estimated that 2,287 northbound passengers will board, and 5,512 southbound passengers will alight. In the PM peak hour, it is estimated that 3,872 northbound passengers will board, and 2,491 southbound passengers will alight.

Table 5.4: Boarding and Alighting Numbers at Tara Street Station in 2065, Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	2,287	288	5,207	1,683	123	3,932	2,035	120	4,795	3,872	457	9,933
Southbound	322	5,512	7,789	89	2,413	2,544	79	2,366	2,433	171	2,491	2,805

Source: East Regional Model (ERM)

5.1.3 Boarding and Alighting Volumes: Scenario B

Table 5.5 to Table 5.7 below highlight the boarding and alighting passenger numbers for Tara Street Station in Scenario B.

For the year 2035, during the AM peak hour, 1,258 passengers are expected to board MetroLink vehicles at Tara Street Station and travel north. 178 passengers will board MetroLink vehicles and head south, while 258 northbound passengers and 3,189 southbound passengers will alight. During the PM peak hour, 100 southbound passengers and 1,934 northbound passengers are expected to board, while 409 northbound passengers and 1,203 southbound passengers will alight.

Table 5.5: Boarding and Alighting Numbers at Tara Street Station in 2035, Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	1,258	258	3,582	877	86	2,429	1,125	98	3,189	1,934	409	6,210
Southbound	178	3,189	5,556	39	1,252	1,824	47	1,204	1,759	100	1,203	1,943

Source: East Regional Model (ERM)

Table 5.6 shows the passenger boarding and alighting numbers for the 2050 year. During the AM peak hour, it is estimated that 1,712 northbound passengers will board, and 3,715 southbound passengers will alight. In the PM peak hour, it is estimated that 2,596 northbound passengers will board, and 1,874 southbound passengers will alight.

Table 5.6: Boarding and Alighting Numbers at Tara Street Station in 2050, Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	1,712	190	4,391	1,516	64	3,602	1,483	71	3,721	2,596	224	6,771
Southbound	77	3,715	5,283	37	1,893	2,311	39	1,772	2,168	77	1,874	2,268

Source: East Regional Model (ERM)

For the year 2065, during the AM peak hour, 2,259 passengers are expected to board MetroLink vehicles at Tara Street Station and travel north. 83 passengers will board MetroLink vehicles and head south, while 222 northbound passengers and 4,911 southbound passengers will alight. During the PM peak hour, 88 southbound passengers and 2,921 northbound passengers are expected to board, while 251 northbound passengers and 2,040 southbound passengers will alight.

Table 5.7: Boarding and Alighting Numbers at Tara Street Station in 2065, Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	2,259	222	5,124	1,818	81	4,212	2,004	86	4,774	2,921	251	7,443
Southbound	83	4,911	6,258	46	2,346	2,620	46	2,200	2,504	88	2,040	2,391

Source: East Regional Model (ERM)

5.1.4 Public Transport Interchange Volumes

The following tables present the volume of passengers interchanging to and from the Project with other public transport modes in Scenario A and Scenario B, in both AM and PM peak hours. Most passengers are alighting at this station in the AM peak hour as their final stop, and are first boarding here in the PM peak hour. However there are also significant volumes of passengers interchanging with bus, and rail and DART in Scenario A; and with bus, rail and DART, and Luas in Scenario B. In both Scenario A and Scenario B, interchange volumes are highest to and from buses, particularly among passengers who are alighting from the Project and continuing their journeys on the bus network.

The area surrounding Tara Street Station is served by several bus services with multiple lines at multiple frequencies, many of which have bus stops in close proximity to the station. Within a 600m buffer from the station, there are more than 30 bus stops located along the R118, Westmoreland Street, Nassau Street, Eden Quay and Burgh Quay, as well as the Tara DART station, and both the Luas Red Line and Green Line, as shown in Figure 3.2. Tara Street Station is located near the Bus Network Redesign proposed spines B, C, D and G.

Table 5.8: Transfers To/From Other Public Transport Modes in Scenario A

Scenario A									
Year	Peak	Boarding				Alighting			
		First Boarding	From Bus	From Rail/DART	From Luas	Final Stop	To Bus	To Rail/DART	To Luas
2035	AM	385	635	634	0	2033	1490	498	0
	PM	1642	603	333	1	408	1012	433	0
2050	AM	479	807	810	0	2395	1837	602	0
	PM	2028	742	411	1	525	1244	562	0
2065	AM	586	1015	1008	0	2892	2179	728	0
	PM	2584	954	504	1	699	1519	729	0

Source: East Regional Model (ERM)

Table 5.9: Transfers To/From Other Public Transport Modes in Scenario B

Scenario B									
Year	Peak	Boarding				Alighting			
		First Boarding	From Bus	From Rail/DART	From Luas	Final Stop	To Bus	To Rail/DART	To Luas
2035	AM	363	485	588	0	1733	1297	416	0
	PM	1307	409	317	2	333	873	406	0
2050	AM	437	609	490	348	1861	1419	396	258
	PM	1634	494	253	300	497	1165	331	160
2065	AM	525	958	595	386	2449	1936	457	329
	PM	1655	722	295	349	427	1345	405	190

Source: East Regional Model (ERM)

5.1.5 Distribution of Boarding and Alighting Passengers

Figure 5.2 shows the origins of passengers arriving to board at the station and Figure 5.3 the destination of passengers alighting at Tara Street Station during the AM peak. The width of the lines is proportional to the number of commuters leaving/arriving at the station. The main origins of passengers in the AM peak are residential and employment areas at the east of the station such as North Wall and Dublin Docklands. The modelling indicates that passenger will come from walking distances of more 15-20 mins to the east of the station and span as far as the Shelbourne Park (Greyhound Stadium) area. Trinity College University south of the station highlights as a main origin of passengers as well. Passenger demand to the west is not indicated to span as far as the east but will include Temple Bar and St. Stephen’s Green shopping district.

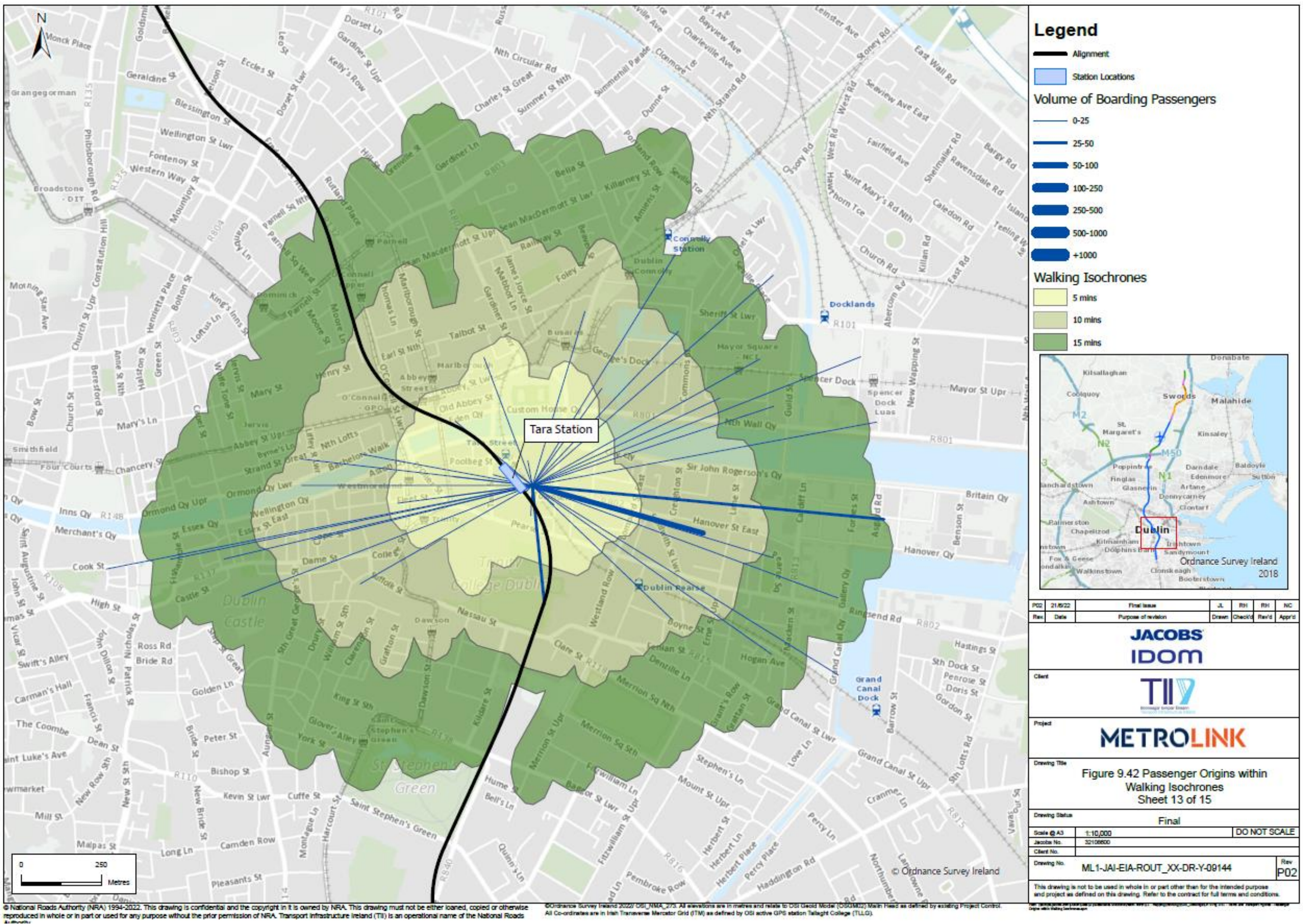


Figure 5.2: Origin of Boarding Passengers During AM peak hour and Walking Catchment Areas

The main destination for disembarking passengers in the AM peak is to the east and southeast of the station, where Dublin Docklands and Trinity College University are located. Temple Bar and St. Stephen's Green Shopping District also highlight as important destinations to the southwest of the station.

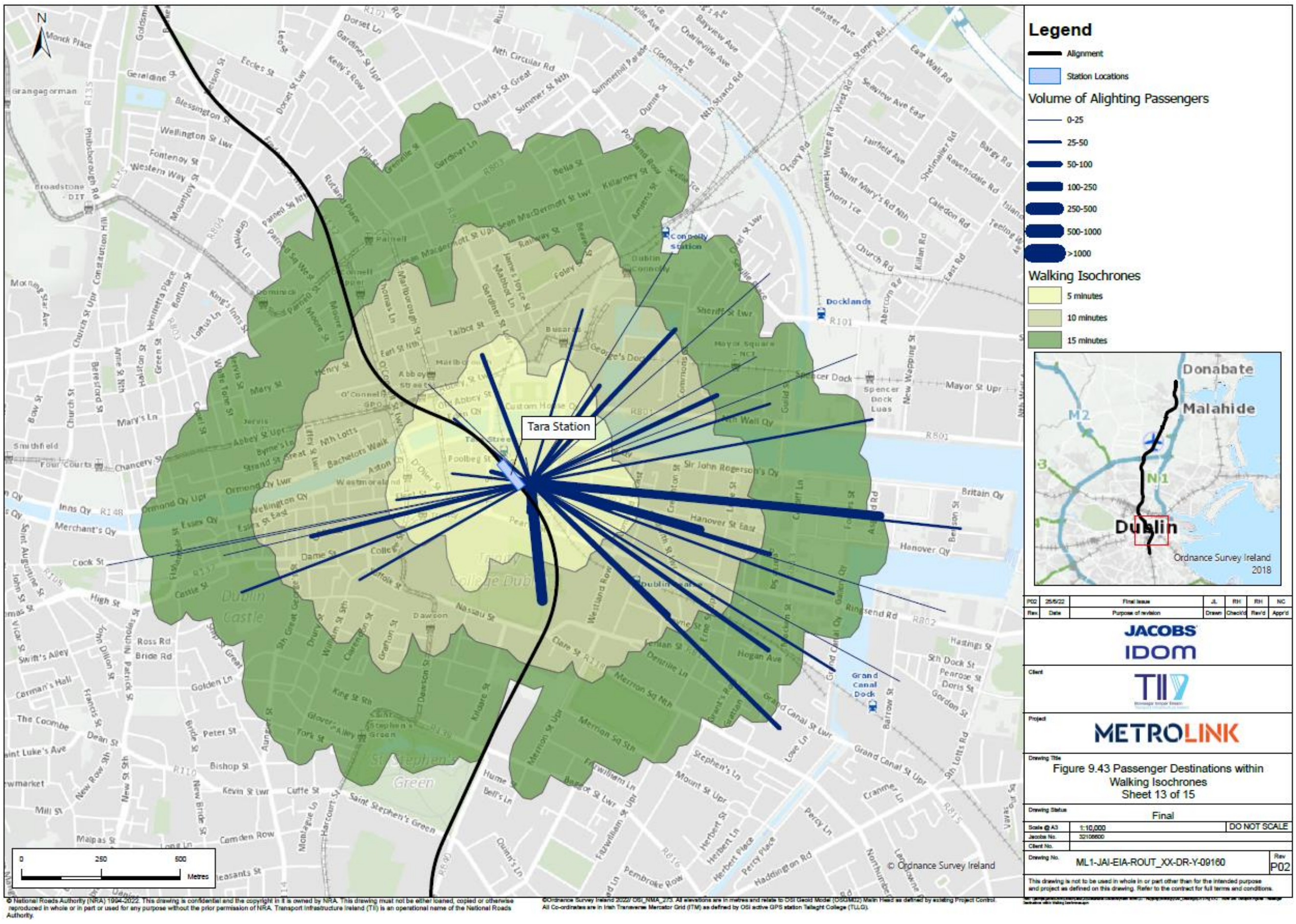


Figure 5.3: Destination for Alighting Passengers During AM peak hour and Walking Catchment Areas

6. Assessment of Impacts

6.1 Operational Phase

As part of the assessment of impacts associated with the Operational Phase of the proposed Project, the impact of the proposed Tara Street Station has examined all modes of transport – public transport (PT), general traffic, walking and cycling.

6.1.1 Public Transport Impact Assessment

Tara Street Station will provide an interchange opportunity with the DART network, serving Tara Street and the DART Southern Coastal Line. The proposed street level layout will include a realignment of the footway on Poolbeg Street which will result in the closure of this link. As such, there will a removal of the current bus stop which serves routes 47, 65 and 65b, and these routes will need to be revised. As part of the Bus Network Redesign proposals, Tara Street and the surrounding area will be served by multiple routes of multiple frequencies.

The National Transport Authority's (NTA) East Regional Model (ERM) has been interrogated to estimate the reduction in private car trips associated with the origin and destination trips in the zones around Mater Station. The modal split between public transport, active travel, and car users in Scenario A and Scenario B are shown in Figure 6.1 and Figure 6.2 respectively. These are based on trips made from zones within a 2km catchment of the station over a 12-hour period.

In Scenario A, PT mode share is estimated to increase by up to 3 percentage points (including the Project) compared to the Do Minimum, bringing potential PT mode share up to 43% in 2065. Car mode share is estimated to decrease by up to 1 percentage point compared to the Do Minimum, bringing it down to 19% by 2065. Active modes mode share, which includes walking and cycling, is estimated to decrease by up to 2 percentage points compared to the Do Minimum, to 38% by 2065. Overall, there will be an expected shift towards sustainable modes (PT and active modes), and a reduction in car mode share for trips made from zones around Tara Street Station.

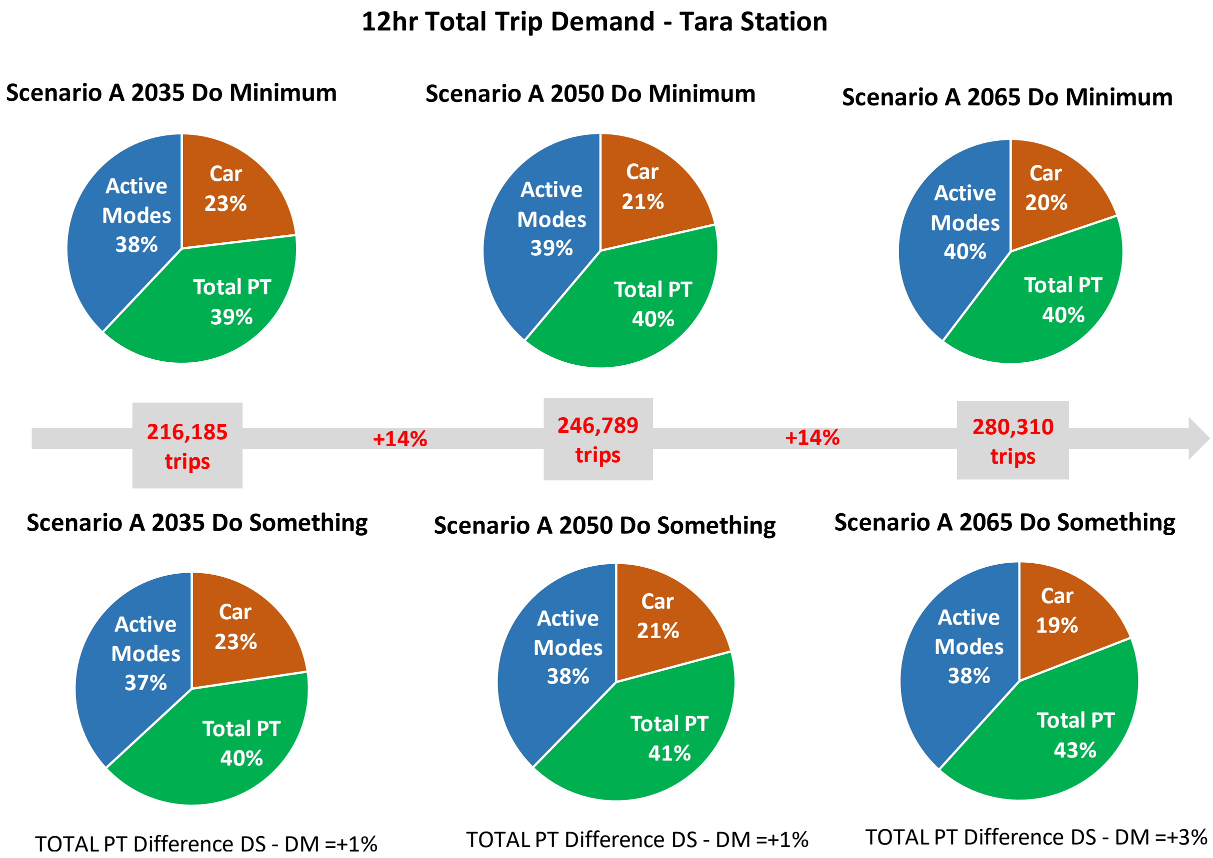


Figure 6.1: Mode Share of Trips from Zones around Tara Street Station - Scenario A

In Scenario B, PT mode share is estimated to increase by up to 2 percentage points (including the Project) compared to the Do Minimum, bringing potential PT mode share up to 45% in 2065. Car mode share is estimated to decrease by up to 1 percentage point compared to the Do Minimum, bringing it to 19% by 2065. Active modes mode share, which includes walking and cycling, is estimated to decrease by up to 1 percentage point compared to the Do Minimum, to 36% by 2065. Overall, there will be an expected shift towards sustainable modes (PT and active modes), and a reduction in car mode share for trips made from zones around Tara Street Station.

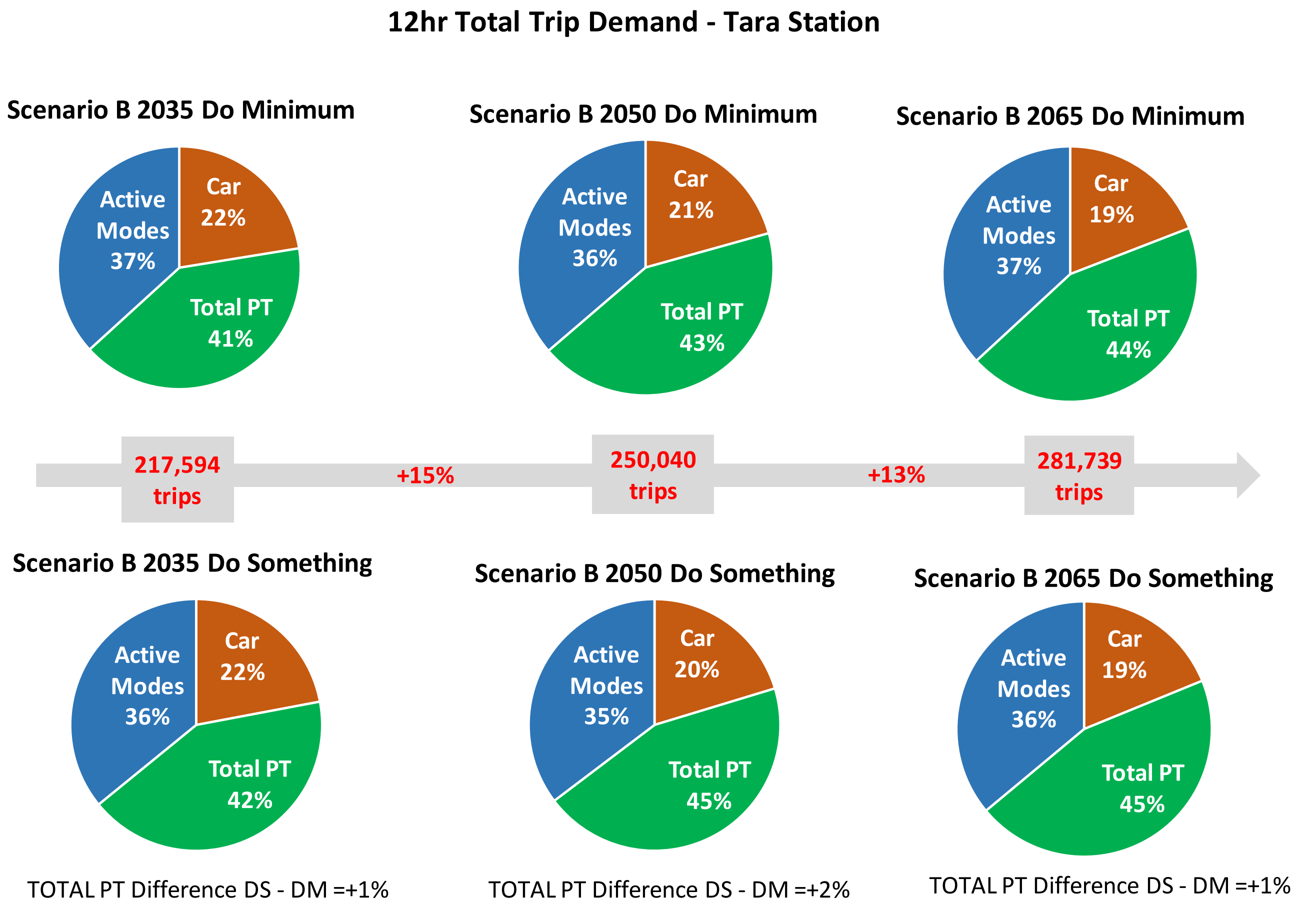


Figure 6.2: Mode Share of Trips from Zones around Tara Street Station - Scenario B

Figure 6.3 presents the changes in public transport mode share between the Do Minimum and Do Something scenarios in Scenario A 2065 AM Peak Hour, while Figure 6.4 presents the same for Scenario B 2065 AM Peak Hour.

In the AM peak hour of 2035, for both Scenario A and Scenario B, the zones immediately surrounding Tara Street Station see estimated increase in PT mode share (including the Project) of 1-5 percentage points. This increase extends to a number of zones around the station in the 2050 and 2065 AM periods.

In the AM peak hour of 2035, for both Scenario A and Scenario B, the zones around Tara Street Station see estimated increase in PT mode share (including the Project) of 1-5 percentage points. For Scenario A, this increase extends to most zones in the southeast city centre in the 2050 and 2065 AM periods.

In the PM peak hour, for Scenario A, most zones around Tara Street Station see estimated increase in PT mode share (including the Project) of 1-5 percentage points in 2035; and this increase extends to most zones in the southeast city centre by 2065. For Scenario B, the zones immediately around Tara Street Station see estimated increase in PT mode share (including the Project) of 1-5 percentage points in 2035, 2050, and 2065.

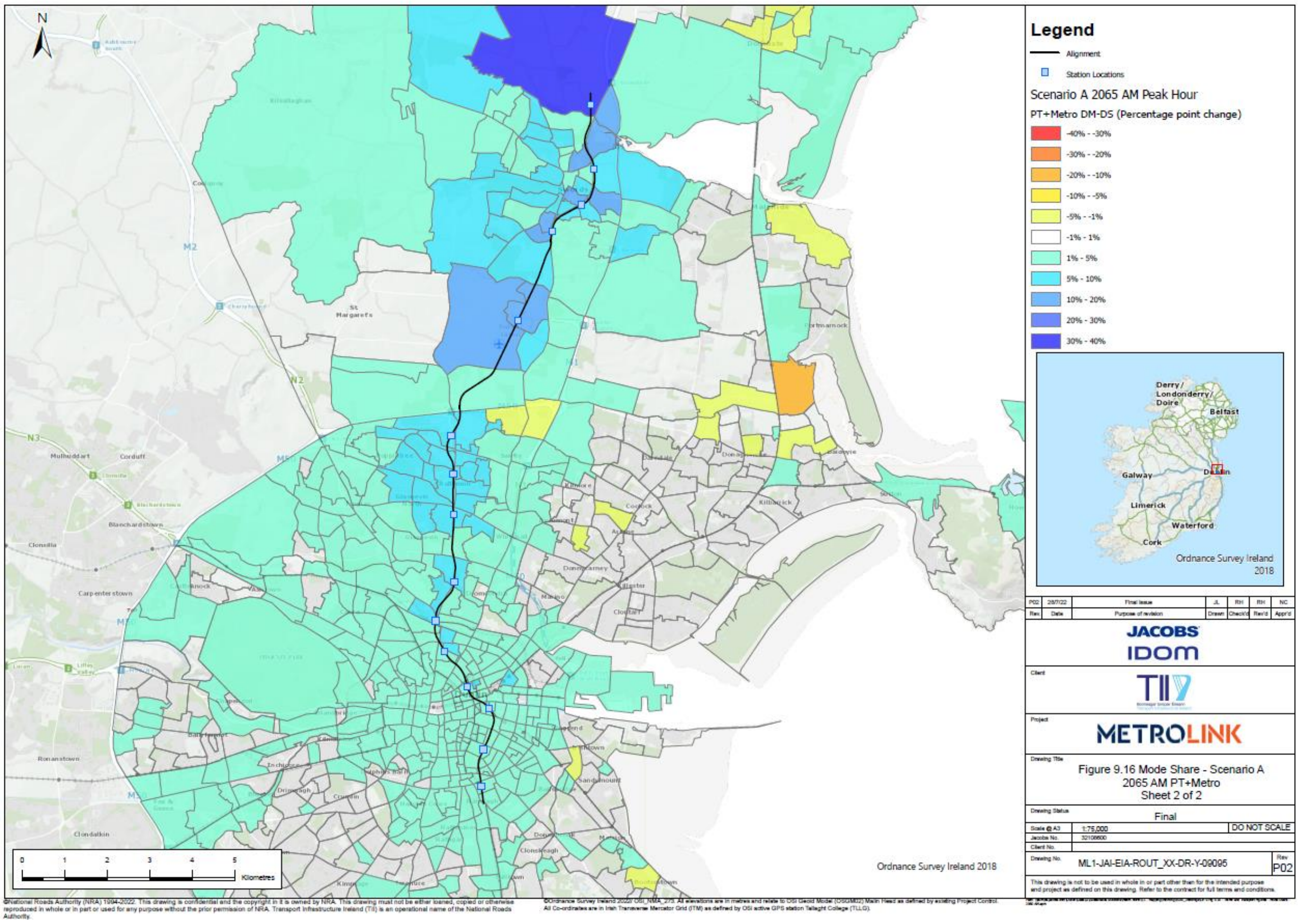


Figure 6.3: Changes in Public Transport Mode Share (including the Project) in Scenario A 2065 AM Peak Hour

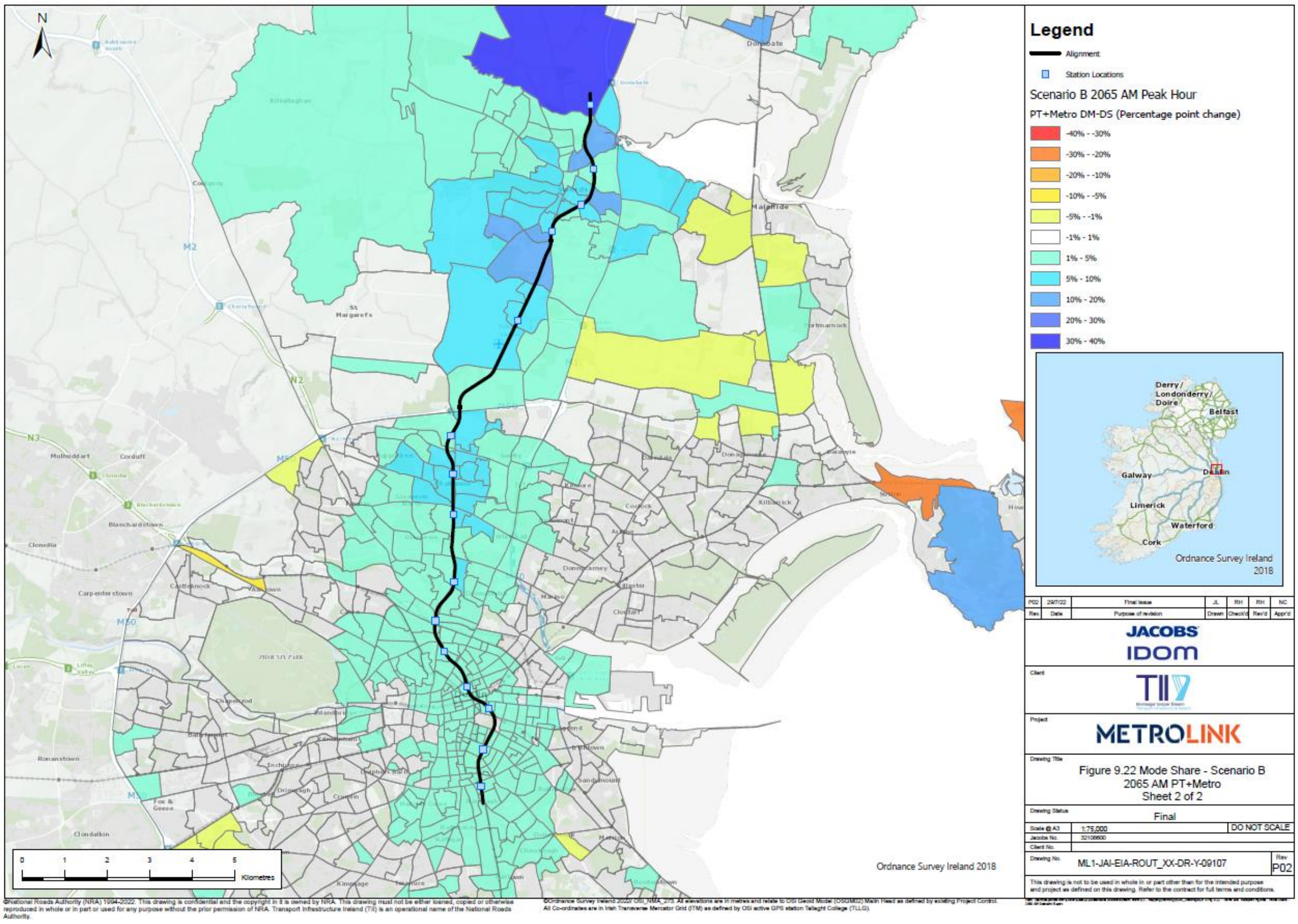


Figure 6.4: Changes in Public Transport Mode Share (including the Project) in Scenario B 2065 AM Peak Hour

End-to-end public-transport-only journey time comparisons between Do Minimum and Do Something scenarios, including interchange between the Project and other public transport modes, have been undertaken to investigate benefits to journey time with the proposed Project in place in both Scenario A and Scenario B. The assessments were carried out for zones located across the city as illustrated in Figure 6.5 and Table 6.1. These zones have been identified using local knowledge of population settlements and trip attractors.

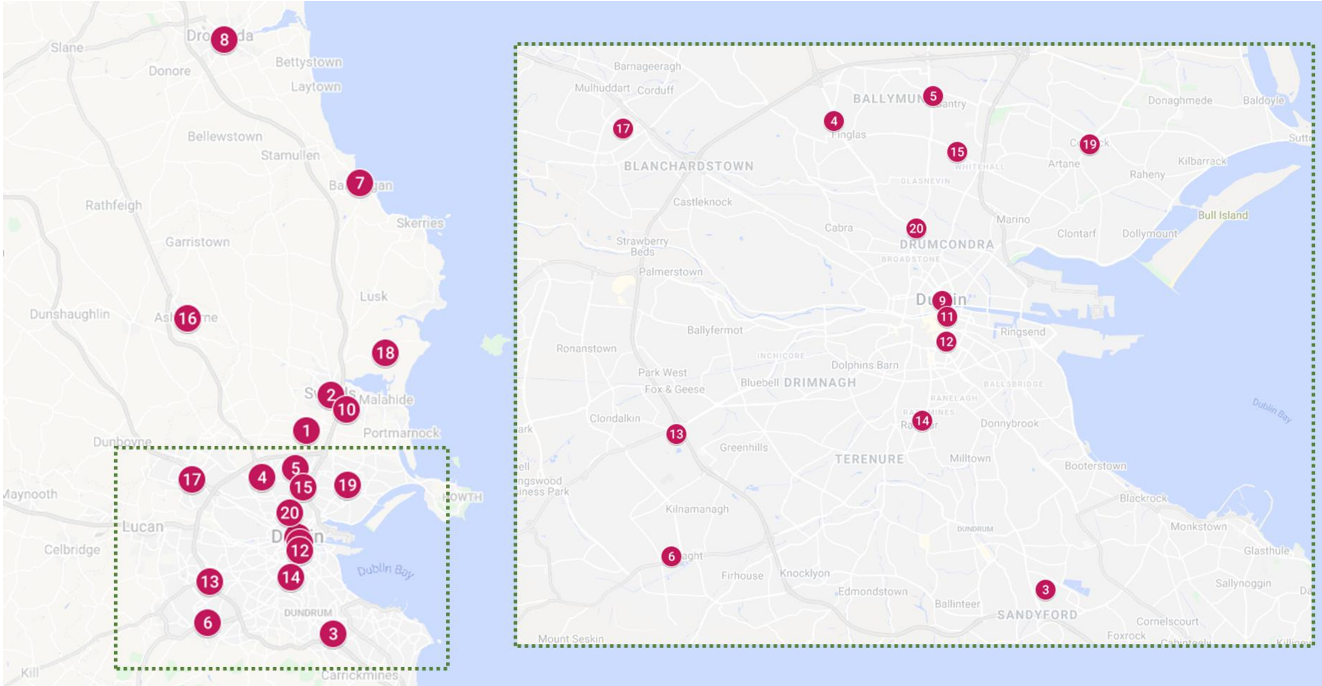


Figure 6.5: Zones assessed for public transport journey time

Table 6.1: Zones assessed for public transport journey time

Nb	Location	Nb	Location	Nb	Location	Nb	Location
1	Dublin Airport	**6**	Tallaght	**11**	College Street	**16**	Ashbourne
2	Swords Pavilion	**7**	Balbriggan	**12**	St. Stephen's Green	**17**	Blanchardstown
3	Sandyford	**8**	Drogheda	**13**	Red Cow	**18**	Donabate
4	Finglas	**9**	O'Connell Street	**14**	Rathgar	**19**	Coolock
5	Ballymun	**10**	Sword East	**15**	DCU	**20**	Glasnevin

Tara Street Station is located within the College Street zone/ area.

- In Scenario A the following changes to journey times are observed:
- Public transport journeys from College Street area to Dublin Airport area will see time savings of approximately 15 minutes in the 2035 AM period, rising to approximately 19 minutes in the 2065 AM period, when the proposed Project is in place.
- Public transport journeys from College Street area to Swords Pavilion area will see time savings of approximately 13 minutes in the 2035 AM period, rising to approximately 17 minutes in the 2065 AM period;
- In the 2035, 2050 and 2065 AM period, public transport journeys from College Street area to Ballymun area will see time savings of approximately 12 minutes.

In Scenario B the following changes to journey times are observed:

- Public transport journeys from College Street area to Dublin Airport area will see time savings of approximately 14 minutes in the 2035 AM period, rising to approximately 23 minutes in the 2065 AM period, when the proposed Project is in place.

- Public transport journeys from College Street area to Swords Pavilion area will see time savings of approximately 10 minutes in the 2035 AM period, rising to approximately 12 minutes in the 2065 AM period;
- In the 2035, 2050 and 2065 AM period, public transport journeys from College Street area to Ballymun area will see time savings of approximately 11 minutes.

6.1.2 Traffic Impact Assessment

The future street level layout at Tara Street Station will reduce Poolbeg Street to one-lane shared use space in the westbound direction. At present there are low volumes of traffic utilising Poolbeg Street and therefore there will be a minimal impact on road users. Table 6.2 presents the results from the LinSig analysis undertaken at the Tara Street/Poolbeg Street Signalised Junction in 2035. In both the AM and PM peak hours, the junction is operating within capacity.

Table 6.2: LinSig Model Result Summary – Tara Street / Poolbeg Street Signalised Junction: 2035 Peak Hour

Arm	Lane	AM Peak		PM Peak	
		Degree of Saturation [%]	Mean Max Queue [PCU]	Degree of Saturation [%]	Mean Max Queue [PCU]
Tara Street	Ahead Left	29.6	0.5	37.4	0.5
Tara Street	Ahead	27.8	0.4	36.6	2.0
Tara Street	Ahead	19.4	0.4	37.3	0.6
Poolbeg Street	Right Ahead	12.0	1.5	5.0	0.4
Practical Reserve Capacity (PRC)		**204.5**		**140.4**	

Traffic lanes on Tara Street will be unaffected. Townsend Street (east) will also be reduced to one lane eastbound. To ensure the Dublin Fire Brigade HQ is not impacted by the proposed Project, a contra-flow lane will be operational westbound on Townsend Street to allow for the fire brigade exit. Table 6.3 presents the results from the LinSig modelling undertaken at the Tara Street/Townsend Street Signalised Junction in 2035. In both the AM and PM peak hours, the junction is operating within capacity.

Table 6.3: LinSig Model Result Summary – Tara Street / Townsend Street Signalised Junction: 2035 Peak Hour

Arm	Lane	AM Peak		PM Peak	
		Degree of Saturation [%]	Mean Max Queue [PCU]	Degree of Saturation [%]	Mean Max Queue [PCU]
Tara Street	Ahead	42.9	8.9	48.0	10.8
Tara Street	Ahead	39.3	8.7	44.0	10.5
Tara Street	Ahead Right	65.8	11.9	61.9	14.8
R802 Pearse Street	Ahead	10.2	1.8	10.4	1.5
R802 Pearse Street	Right Ahead	37.0	7.4	43.1	8.4
R802 Pearse Street	Right	37.2	7.4	43.3	8.4
R802 Pearse Street	Right	40.2	7.7	46.8	8.8

Arm	Lane	AM Peak		PM Peak	
		Degree of Saturation [%]	Mean Max Queue [PCU]	Degree of Saturation [%]	Mean Max Queue [PCU]
Townsend West	Left Ahead	66.6	13.8	61.1	8.0
Townsend East	Right	4.6	0.1	4.6	0.1
Practical Reserve Capacity (PRC)		**35.1**		**45.5**	

There will be no vehicular access to the Tara Street Station, therefore no additional vehicle traffic is expected during the Operational Phase of this station.

Figure 6.6 presents the changes in car mode share per zone in Scenario A 2065, with Figure 6.7 presenting the same for Scenario B 2065. In the 2035 scenario, the zones surrounding Tara Street Station see changes in private car mode share of less than 1 percentage point, increasing to reductions of up to 5 percentage points in 2050 and 2065.

Over the 12hr period, the zones within a 2km radius of Tara Street Station see a reduction of over 420 car trips between the Scenario A 2035 Do Minimum and Do Something scenarios, reaching a reduction of over 920 trips in Scenario A 2050. In 2065, there is a reduction of 1,300 car trips between the Do Minimum and Do Something scenarios. In Scenario B, these zones see a reduction of over 400 car trips between the 2035 Do Minimum and Do Something scenarios, with a reduction of 280 car trips in 2050. 2065 sees a reduction of 440 car trips between the Do Minimum and Do Something scenarios.

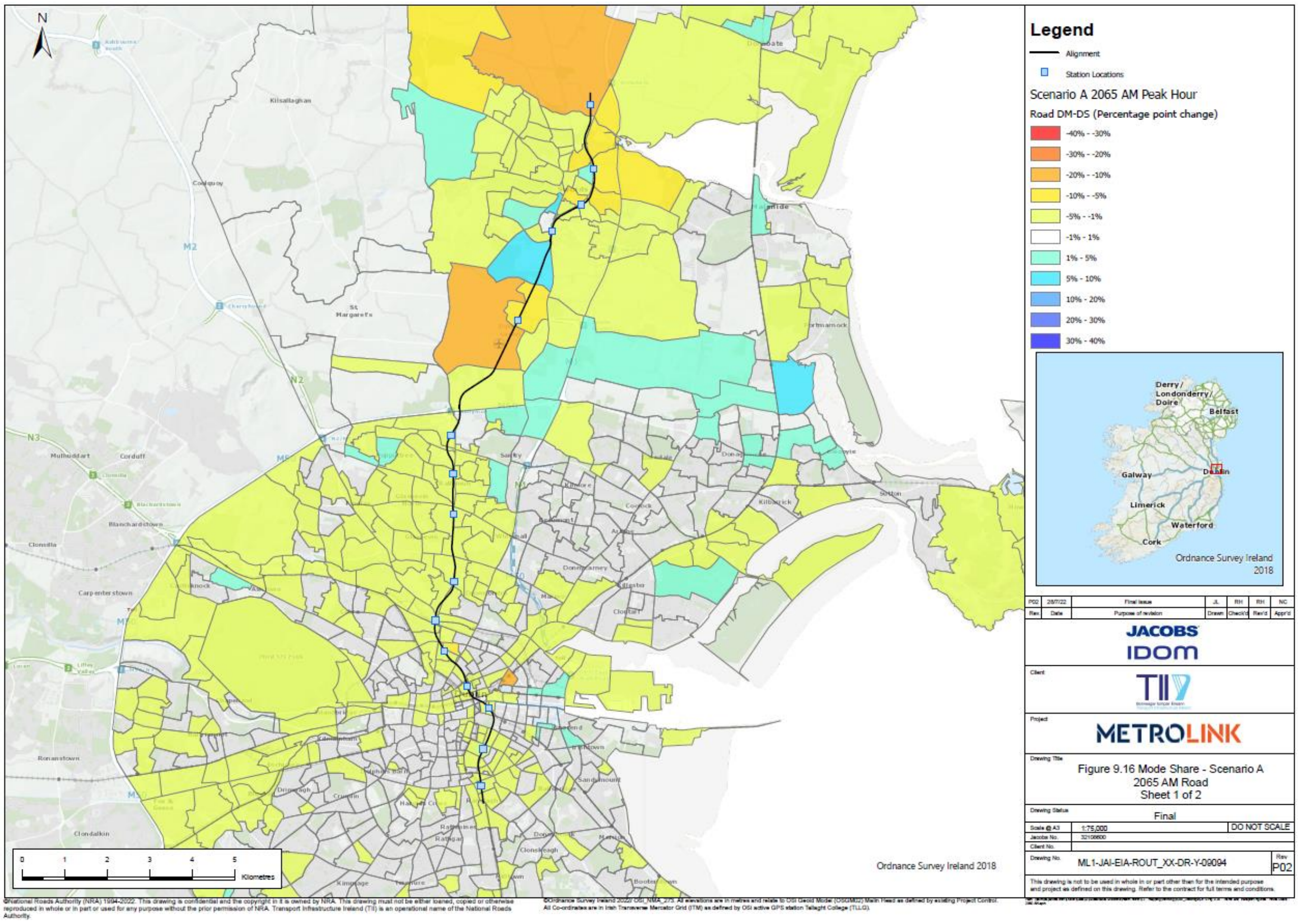


Figure 6.6: Changes in Car Mode Share in Scenario A 2065 AM Peak Hour

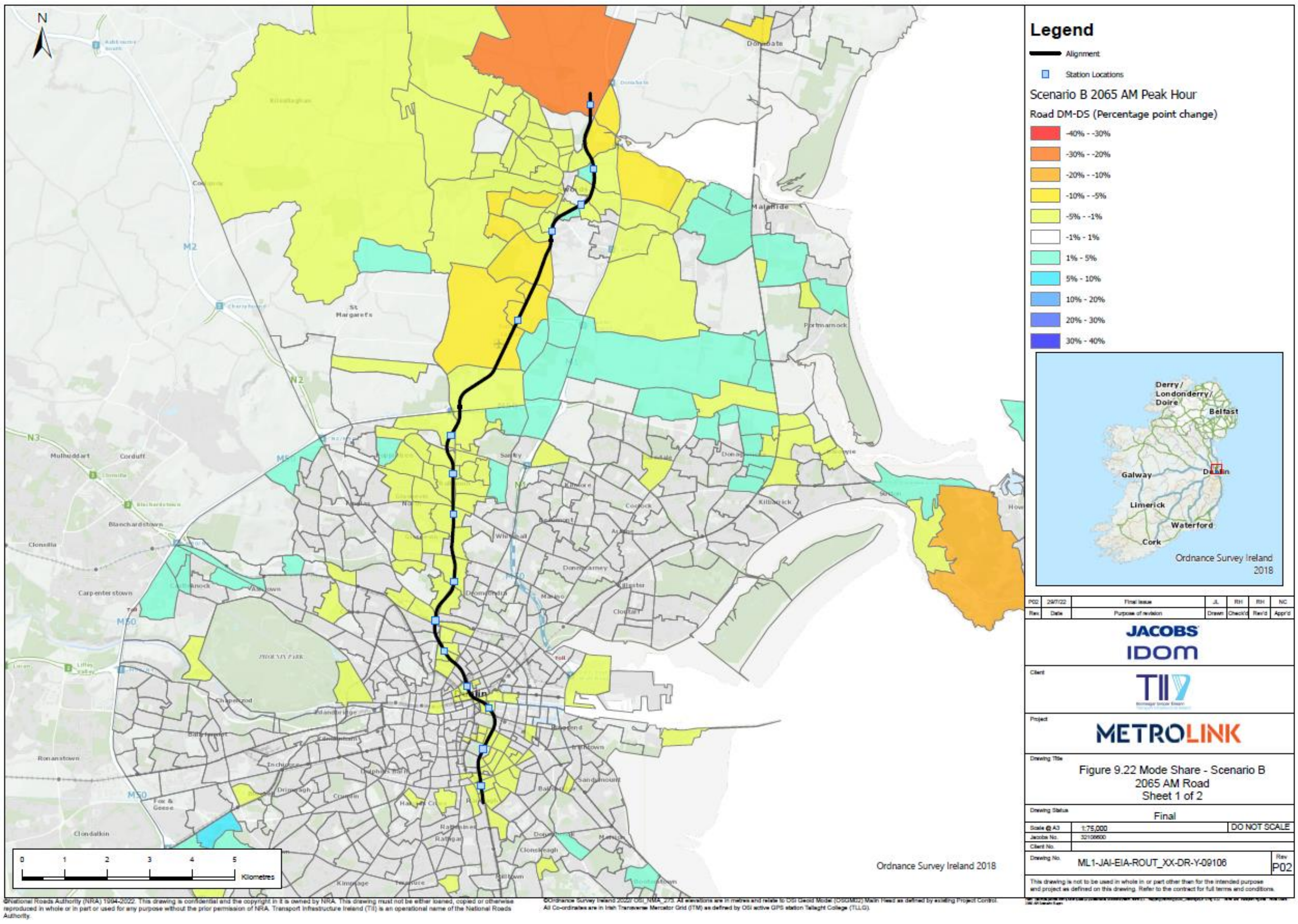


Figure 6.7: Changes in Car Mode Share in Scenario B 2065 AM Peak Hour

6.1.3 Pedestrian Impact Assessment

An assessment of the pedestrian provision around the station has been undertaken, in order to confirm its robustness in catering for the additional demand associated with the proposed Project. The assessment comprises of a 'Footway Comfort Assessment', which predicts the pedestrian comfort levels based on industry guidance, taking cognisance of factors including pedestrian demand and footway width. Furthermore, an additional assessment has been undertaken in order to determine the adequacy of pedestrian crossing provisions in catering for predicted station demand.

The Scenario A 2050 design year was assessed, with Scenario A 2065 also assessed as the 'worst-case scenario' for passenger numbers, as this scenario has the highest volume of total AM passenger demand in the future year between both Scenario A and Scenario B (almost 61,000 AM boarding passengers across the alignment in Scenario A, compared to almost 55,000 AM boarding passengers in Scenario B). At all stations, the passenger demand in the AM peak hour is lower in Scenario B than in Scenario A, with the exception of Fosterstown Station where there is a 12% increase in Scenario B. As such, Scenario B has not been assessed, with the exception of Fosterstown Station to ensure that all possible significant impacts are accounted for.

The results indicate that the R138 west, George's Quay west, and Townsend Street west will fall below DCC guidelines in 2050. These links will be deemed 'Uncomfortable' in 2050 when the proposed Project is in place, as they have insufficient width for the anticipated volume of pedestrians (these links will have over 2,000 pedestrians in the AM peak hour).

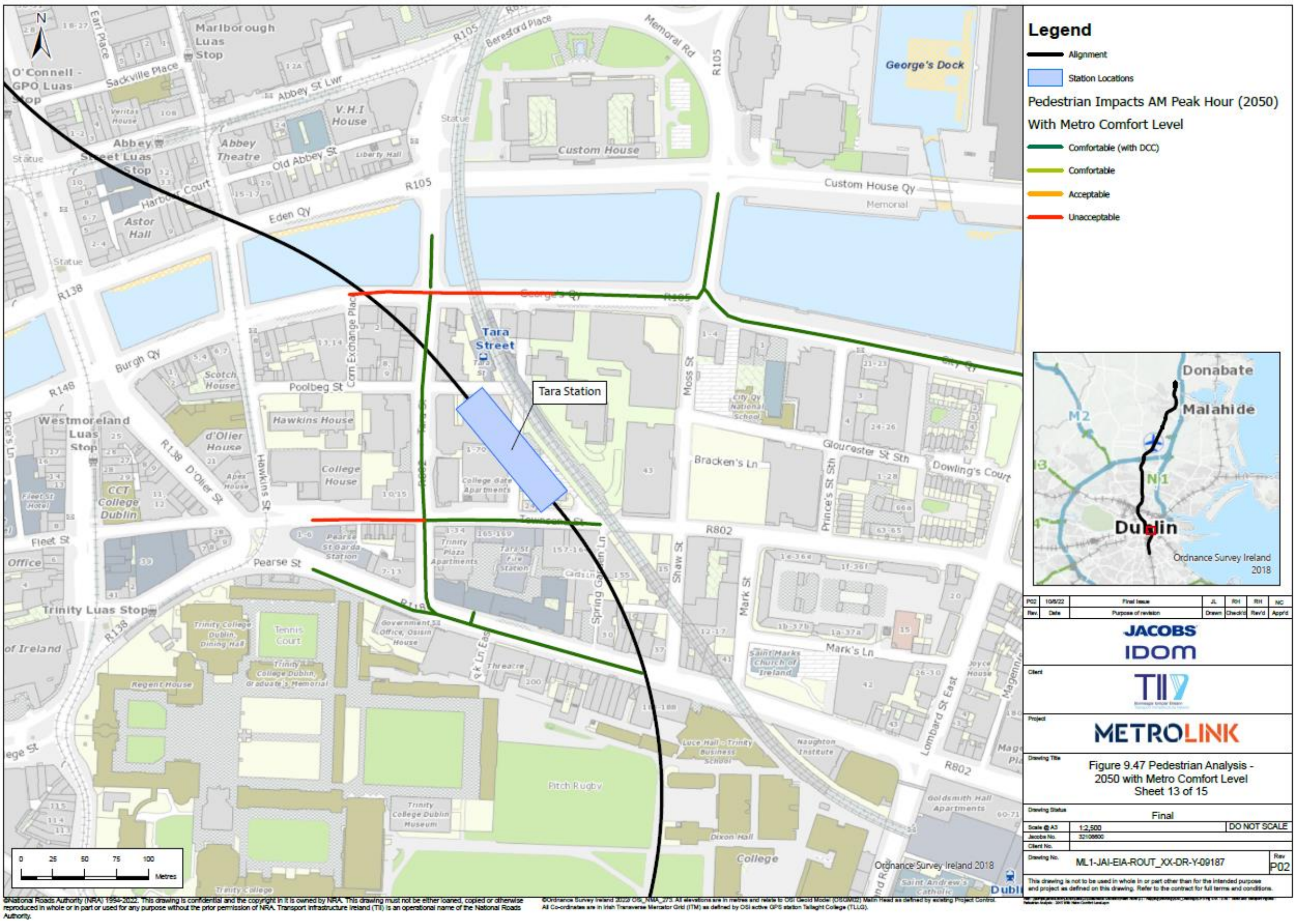


Figure 6.8: Pedestrian Comfort Assessment with the Project – 2050 Scenario AM Peak Hour

In the 2065 AM peak hour, the assessment indicates similar results, however Townsend Street East changes from ‘Comfortable’ to an ‘Acceptable’ comfort level as a result of the associated increase in passengers using the Project. The section of Townsend Street East proposed to increase in width has also been assessed and shows an ‘Acceptable’ pedestrian comfort level for the anticipated demand.

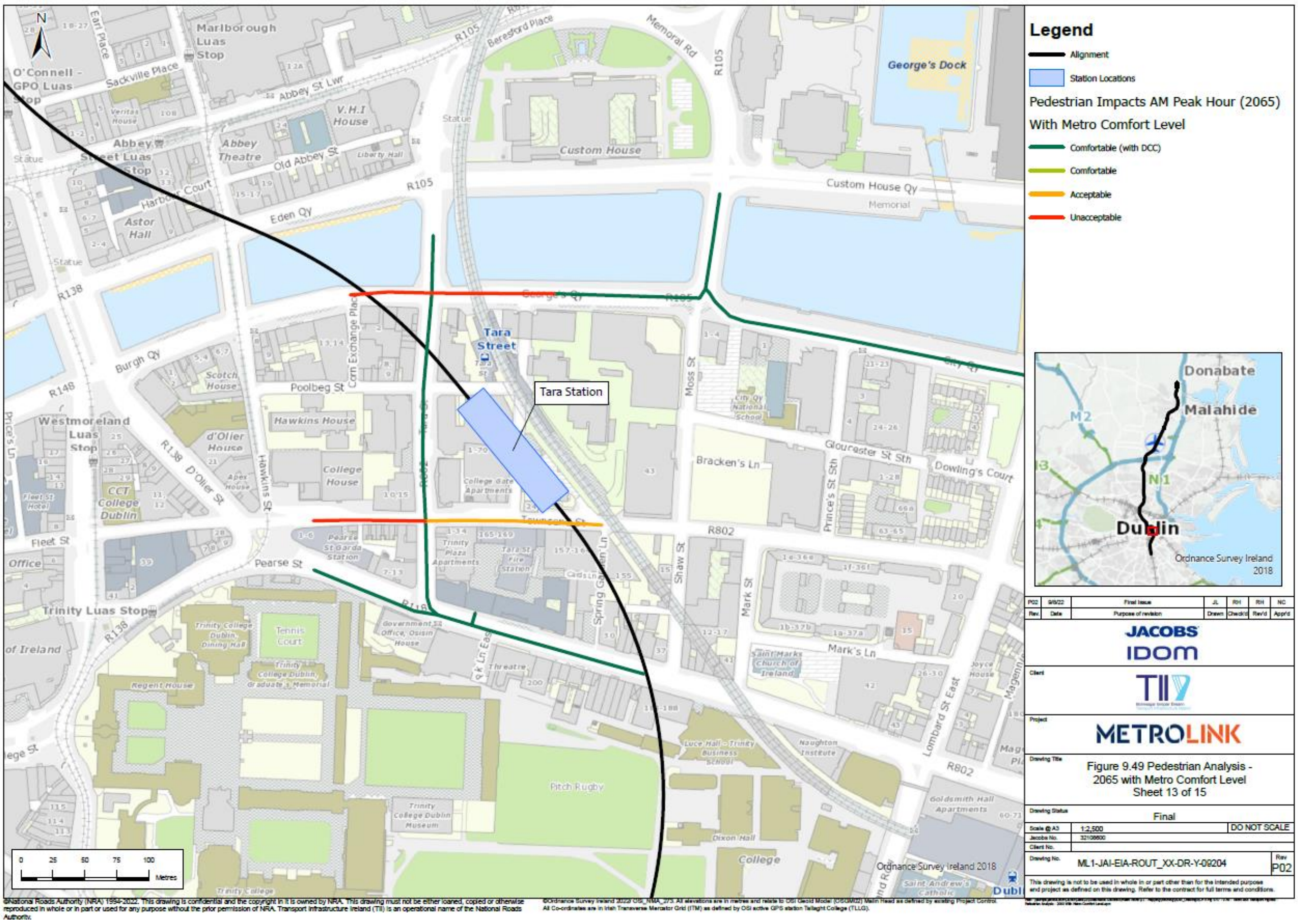


Figure 6.9: Pedestrian Comfort Assessment with the Project – Scenario A 2065 AM Peak Hour

A microsimulation VisWalk model has been developed for the immediate area surrounding the Tara Street Station, the extents of which is shown in Figure 6.10 below. The AM and PM peak hours have been modelled for 2035 and 2050.

The simulation model covers the full extent of the publicly accessible station area, including the immediate vicinity of the station entrance at street level and the Project. It also covers the Irish Rail Station and nearby junctions of Butt Bridge and Poolbeg Street. The Tara Street MicroSim Report further details the mode demands, modelled layout and model development.

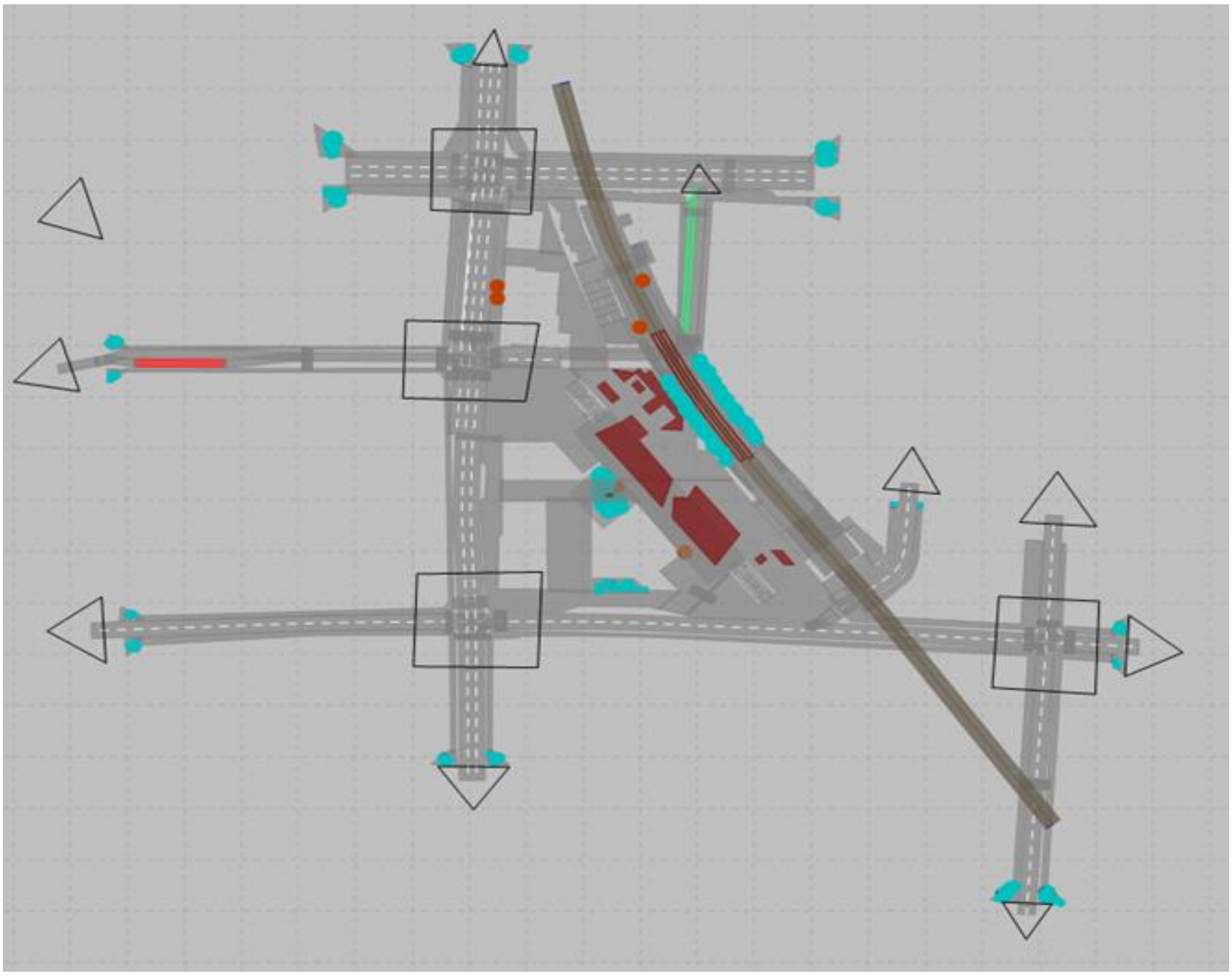


Figure 6.10: Network Coverage of Tara Street Microsimulation VisWalk Model

Figure 6.11 presents the microsimulation VisWalk model at Tara Street Station with pedestrians assigned to the network. Some of the major flows can be seen in the figure, including the large volume of pedestrians heading east on the northern side of Townsend Street. There are no existing pedestrian crossings along Townsend Street east (except at the Moss Street junction), therefore, demand is concentrated on the northern side of this street within the model.

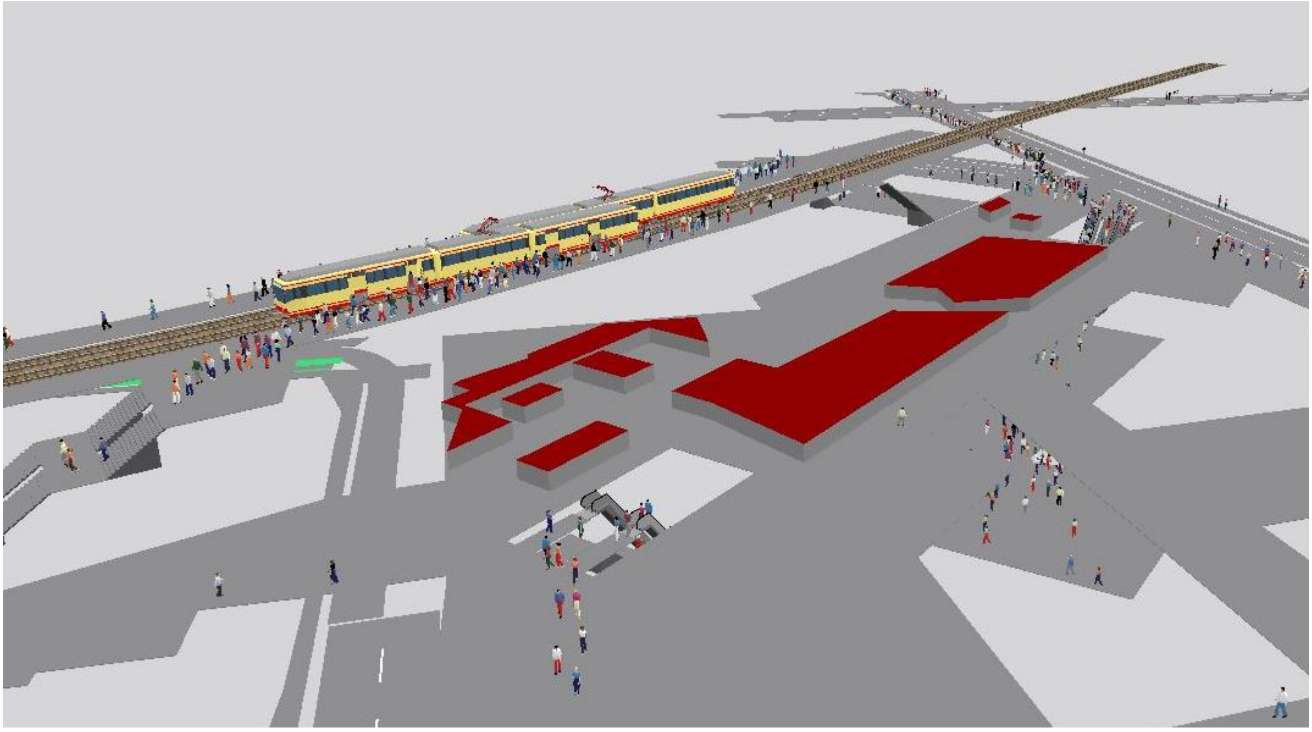


Figure 6.11: Tara Street MicroSimulation VisWalk Model

As noted above, there is a large flow of pedestrians on the northern side of Townsend Street. In the AM period, these are pedestrians heading in the westbound direction. The first opportunity to cross the street using formal pedestrian facilities occurs at the Townsend Street/Moss Street/Shaw Street junction. Currently, only the northern and western arms of this junction have pedestrian facilities. Therefore, pedestrians are concentrated at specific points of this junction. The proposed design to widen Townsend Street at this location (reducing Townsend Street east to one traffic lane) facilitates improvements to pedestrian congestion and crossings in this location.

In order to assess the performance of the pedestrian network with the station in place, Level of Service (LOS) indicators have been retrieved from the model. The LOS scale used in the assessment is shown in Figure 6.12.

Fruin's Level of Service	Average area module		
	Walkway [m²/ped]	Stairs [m²/ped]	Queue [m²/ped]
A	>3.24	>1.85	>1.21
B	3.24-2.32	1.85–1.39	1.21-0.93
C	2.32-1.39	1.39-0.93	0.93-0.65
D	1.39-0.93	0.93-0.65	0.65-0.28
E	0.93-0.46	0.65-0.37	0.28-0.19
F	<0.46	<0.37	<0.19

Figure 6.12: Fruin's Scale Level of Service key representing A as least congested and F as heavily congested

The LOS for the 2050 AM model scenario is shown in Figure 6.13. The pedestrian desire lines from the Tara Street station to the north-west and south-east of the modelled network can be seen in this figure. In particular, the heavy demand on the northern side of Townsend Street can be seen. Apart from waiting areas, this part of the model displays the lowest LOS with a criteria of C.

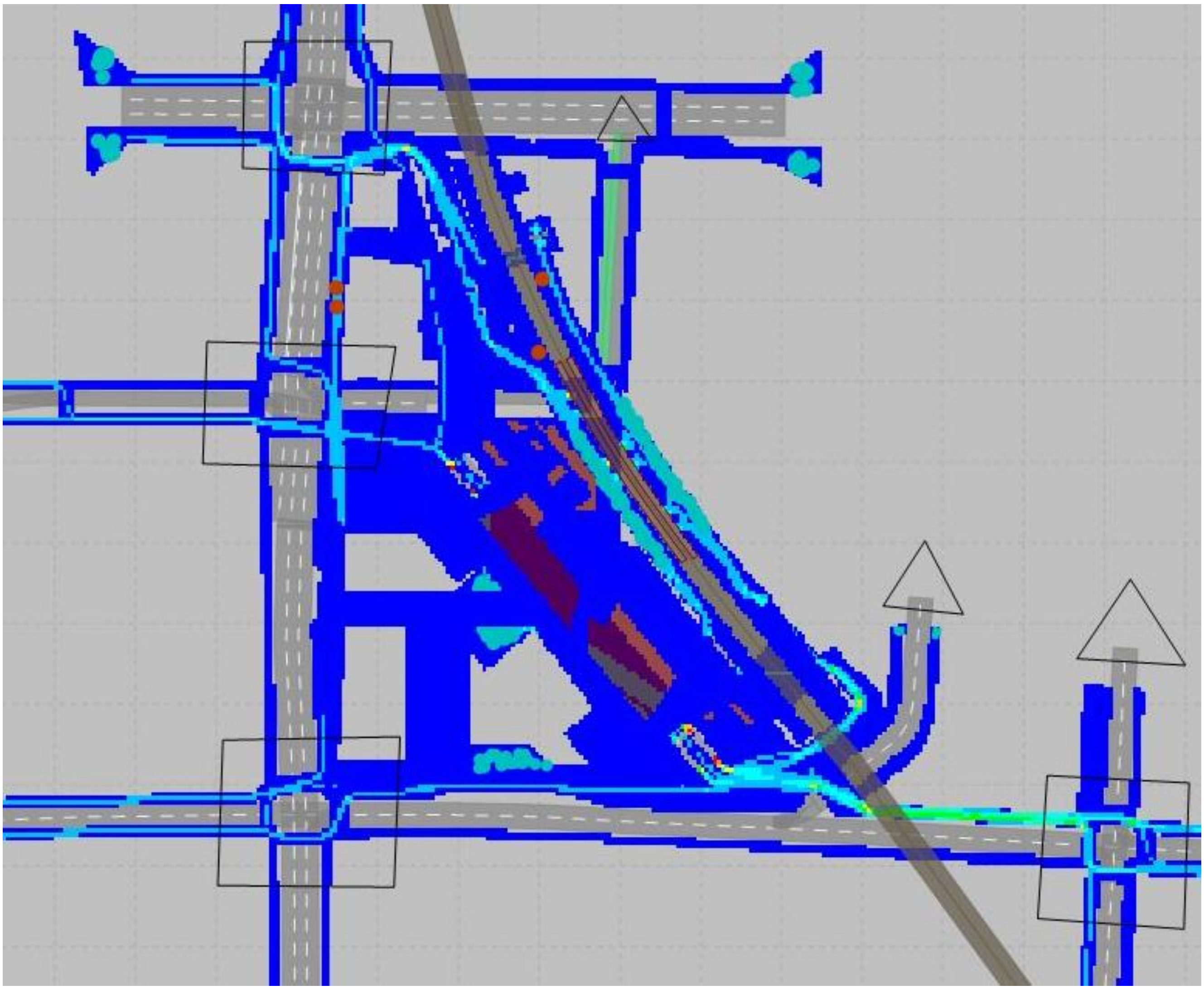


Figure 6.13: Level of Service heat map for Tara Street network during 2050 AM peak

The LOS for the 2050 PM model scenario is shown in Figure 6.14. The LOS on the network in the PM peak is similar to that in the AM, however, the LOS on Townsend Street is slightly higher in the PM period as it meets the criteria for a B rather than a C.

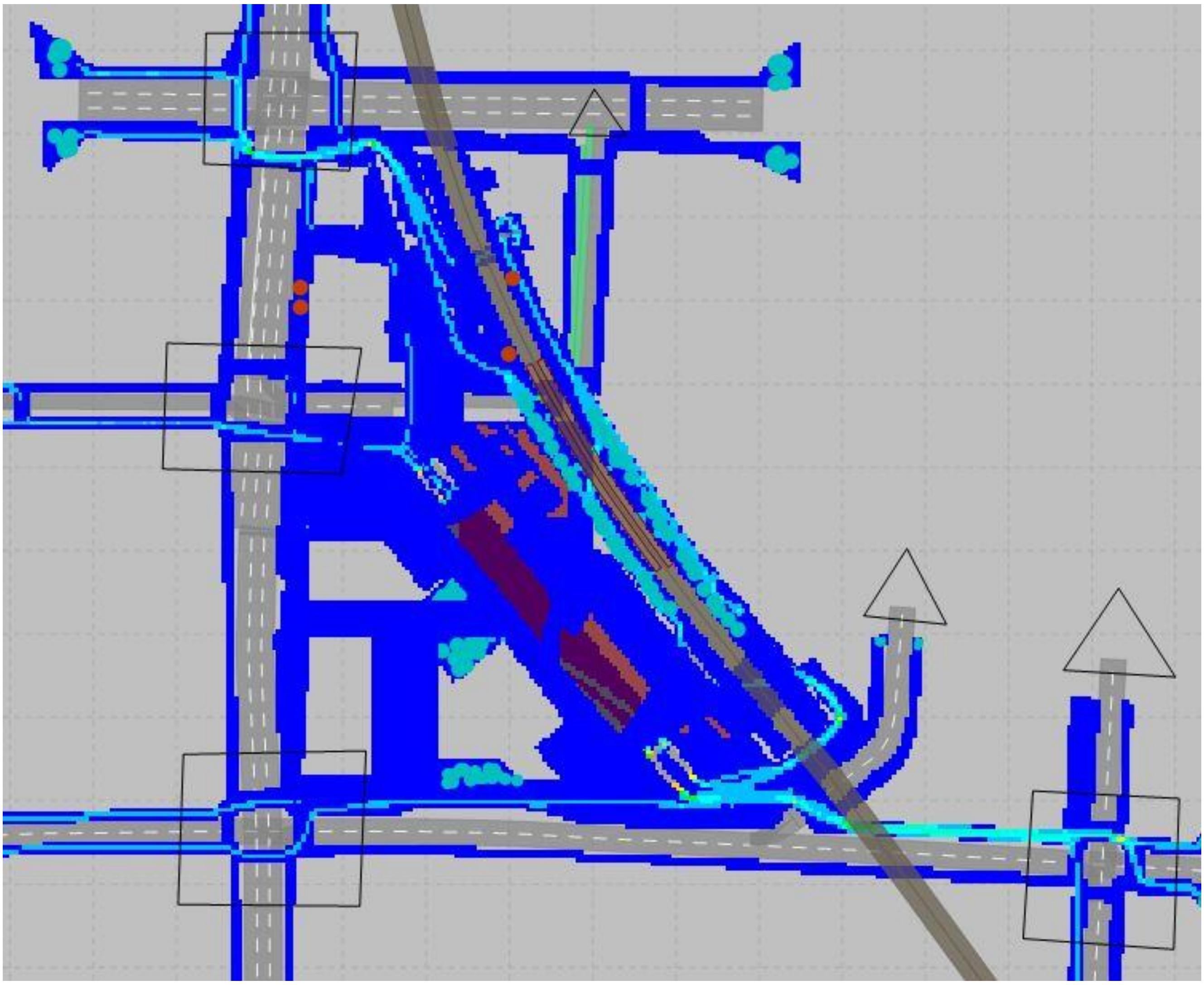


Figure 6.14: Level of Service heat map for Tara Street network during 2050 PM peak

Following a review of the microsimulation model the following points are noted:

- The Tara Street VisWalk microsimulation model demonstrates that the current design for the proposed station is expected to perform with an acceptable LOS. The proposed public plaza offers a high level of service regarding pedestrian routing.
- The north side of Townsend Street experiences relatively high level of pedestrian demand, however the proposed design to widen Townsend Street at this location (at the Moss Street junction) facilitates improvements to pedestrian congestion and the crossings at this location.

6.1.4 Cycling Impact Assessment

The future street layout at Tara Street Station provides for a new two-way cycle link along Luke Street, as part of the shared-use space in this area, which will improve the provisions for cyclists in general.

There will be no impact to the Quality of Service of cycling infrastructure along Tara Street when the proposed Project is in place.

A methodology has been applied to determine the potential demand for cycle parking at each of the stations. This methodology utilises the number of boarding and alighting passengers, the distance of origin/destinations from the station, and the location of the station. The passenger demand from an earlier Opening Year has been utilised to determine the potential cycle demand in the Opening Year, and in the Opening Year +5 Years.

This approach has informed the design and the number of cycle parking spaces provided at each station. Other factors such as the availability of land, potential future land uses and parking supply and the location of the station have also been taken into consideration by the design team in determining the quantum of cycle parking spaces provided.

For the Tara Street Station, a total of 256 cycle spaces are proposed.

6.1.5 Road Safety

A Stage 1 Road Safety Audit has been undertaken for all of the proposed highway works for the Project. This is under a separate cover.

7. Summary

In Scenario A, Tara Street Station will facilitate approximately 37,500 passenger movements over the 12hr peak period (07:00-19:00) in 2035, rising to over 48,400 in 2050 and 60,400 in 2065. In Scenario B, Tara Street Station will facilitate approximately 32,800 passenger movements over the 12hr peak period (07:00-19:00) in 2035, rising to over 43,400 in 2050 and 53,400 in 2065.

The main catchment origins and destinations of the people boarding and alighting at the Tara Street Station will be

- Origins from residential and employment to the east in Northwall and Docklands area;
- Origins from Trinity College Dublin;
- Destinations at Docklands area and Trinity College Dublin; and,
- Destinations at Temple Bar and St. Stephen's Green.

The proposed Project is expected to result in increases in public transport mode share of 1-5 percentage points for trips to and from zones around Tara Street Station. Conversely, there is expected be a reduction in road mode share of 1-5 percentage points for trips to and from zones surrounding the station.

The proposed Project will result in improvements to the public transport journey times for people in the area. In Scenario A, 2065 AM period public transport journeys from College Street area to Dublin Airport area can expect time savings of approximately 19 minutes; to Swords Pavilion area time savings of approximately 17 minutes; and to Ballymun area time savings of approximately 12 minutes. In Scenario B, 2065 AM period public transport journeys from College Street area to Dublin Airport area can expect time savings of approximately 23 minutes; to Swords Pavilion area time savings of approximately 12 minutes; and to Ballymun area time savings of approximately 11 minutes.

The station will also provide for 256 cycle parking spaces. The Tara Street VisWalk microsimulation model demonstrates that the current design for the proposed station is expected to perform with an acceptable LOS. The proposed public plaza offers a high level of service regarding pedestrian routing. However, the north side of Townsend Street experiences relatively high level of pedestrian demand, however the proposed design to widen Townsend Street at this location (at the Moss Street junction) facilitates improvements to pedestrian congestion and the crossings at this location.

In overall terms, the Tara Street Station will provide for improvements to the public transport network resulting in decreases in private car usage/trips, increases in public transport usages and will facilitate walking and cycling to the station, without significantly impacting on the operation of the road network in the area.

Appendix A. Traffic Flow Diagrams

Base Flows

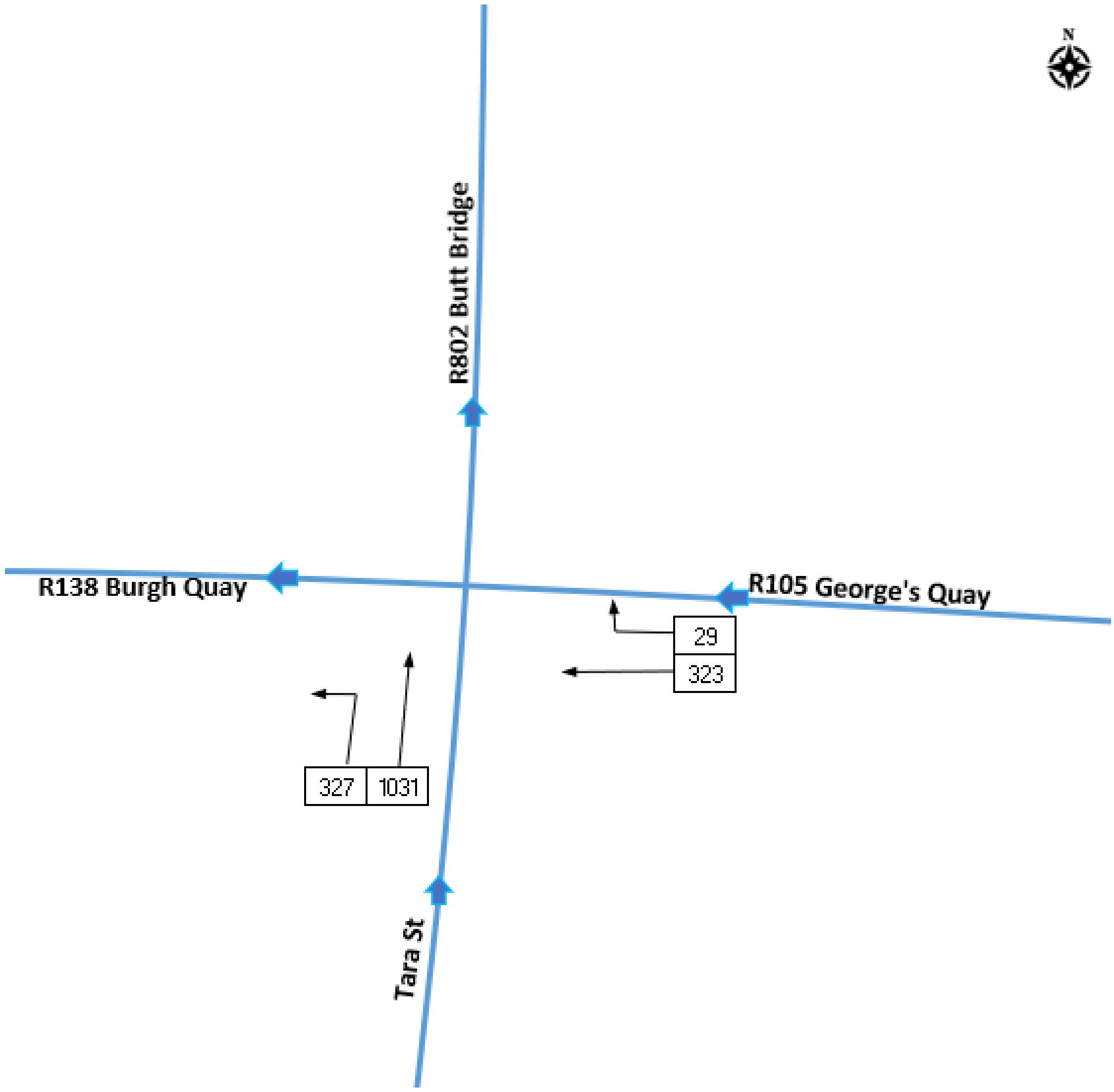


Figure 7.1:Tara Street / George's Quay - AM 2018 Baseline Flows

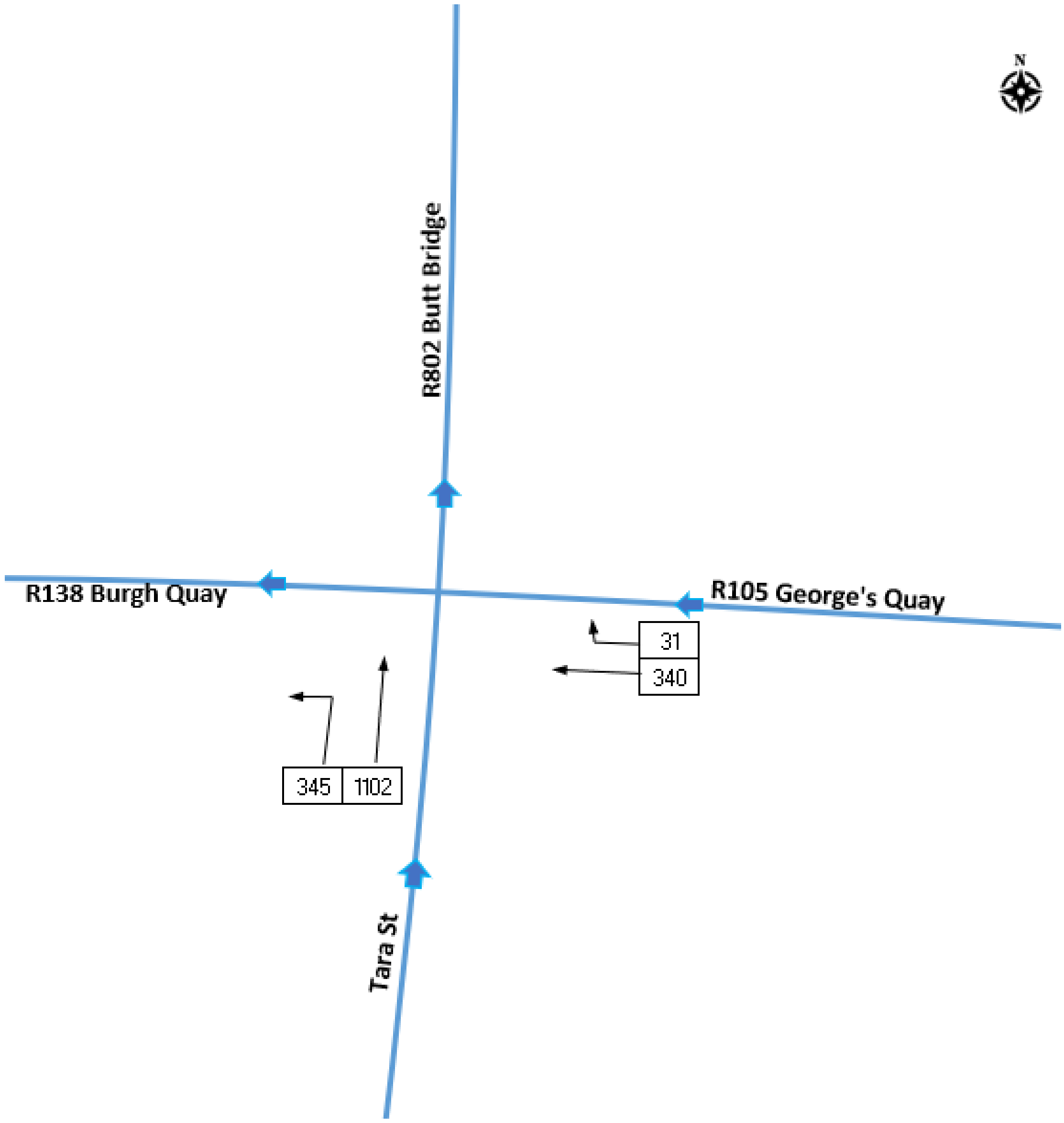


Figure 7.2: Tara Street / George's Quay – PM 2018 Baseline Flows

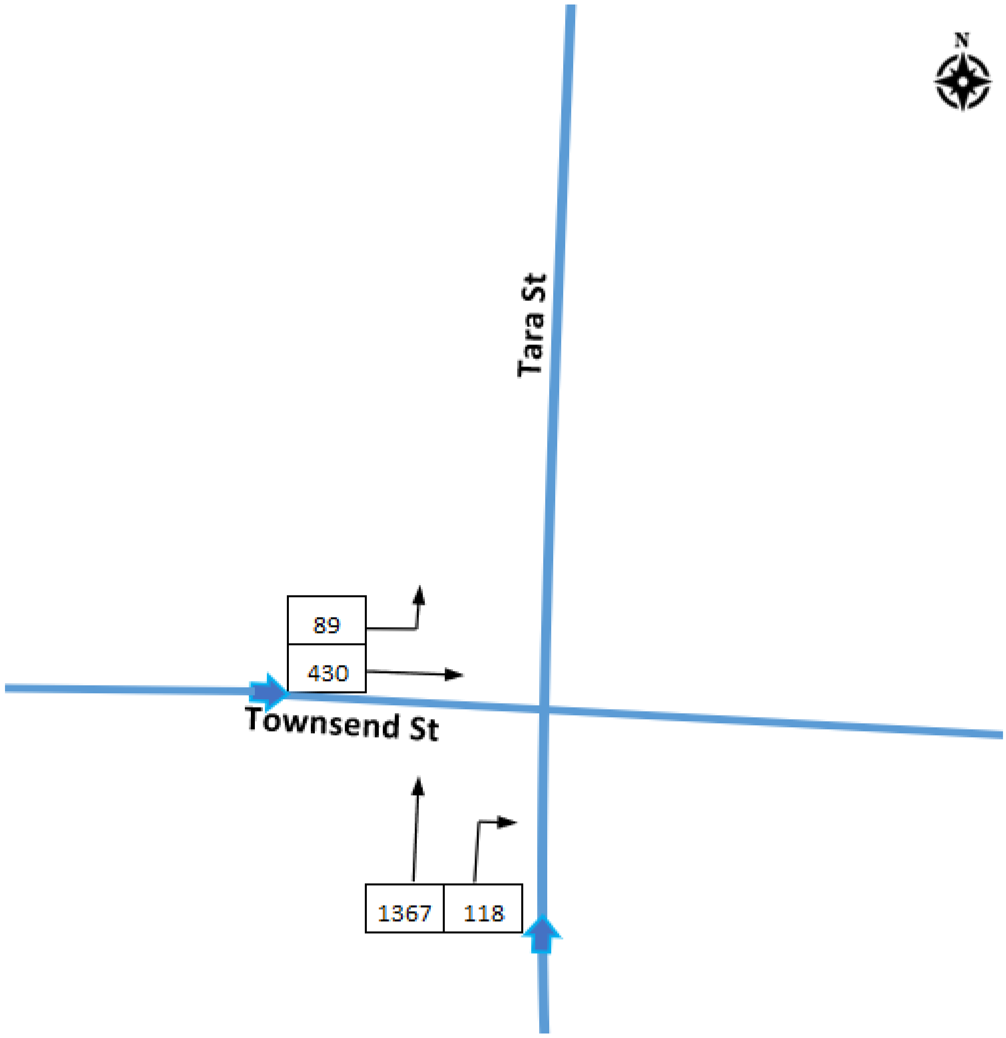


Figure 7.3: Tara Street / Townsend Street – AM 2018 Baseline Flows

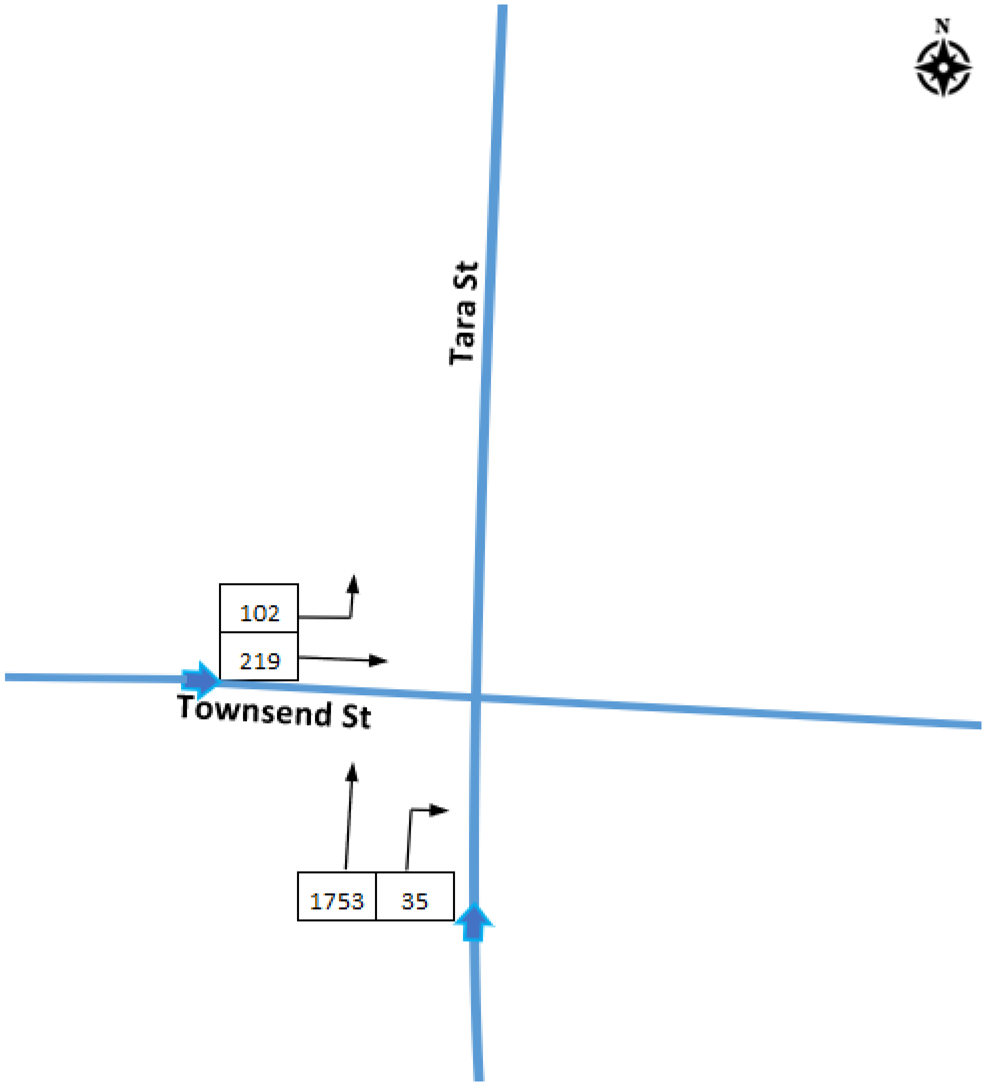


Figure 7.4: Tara Street / Townsend Street – PM 2018 Baseline Flows

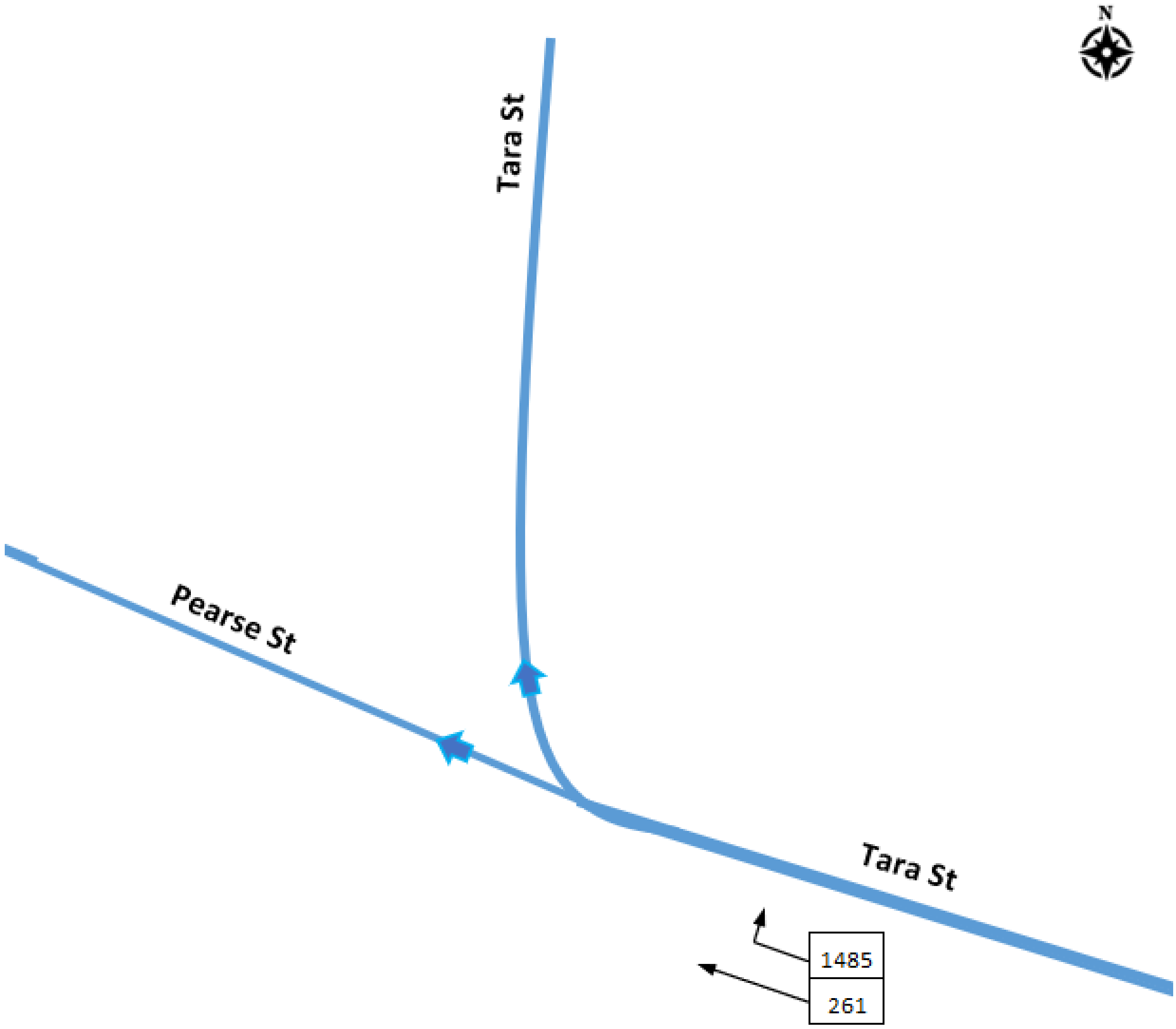


Figure 7.5: Tara Street / Pearse Street – AM 2018 Baseline Flows

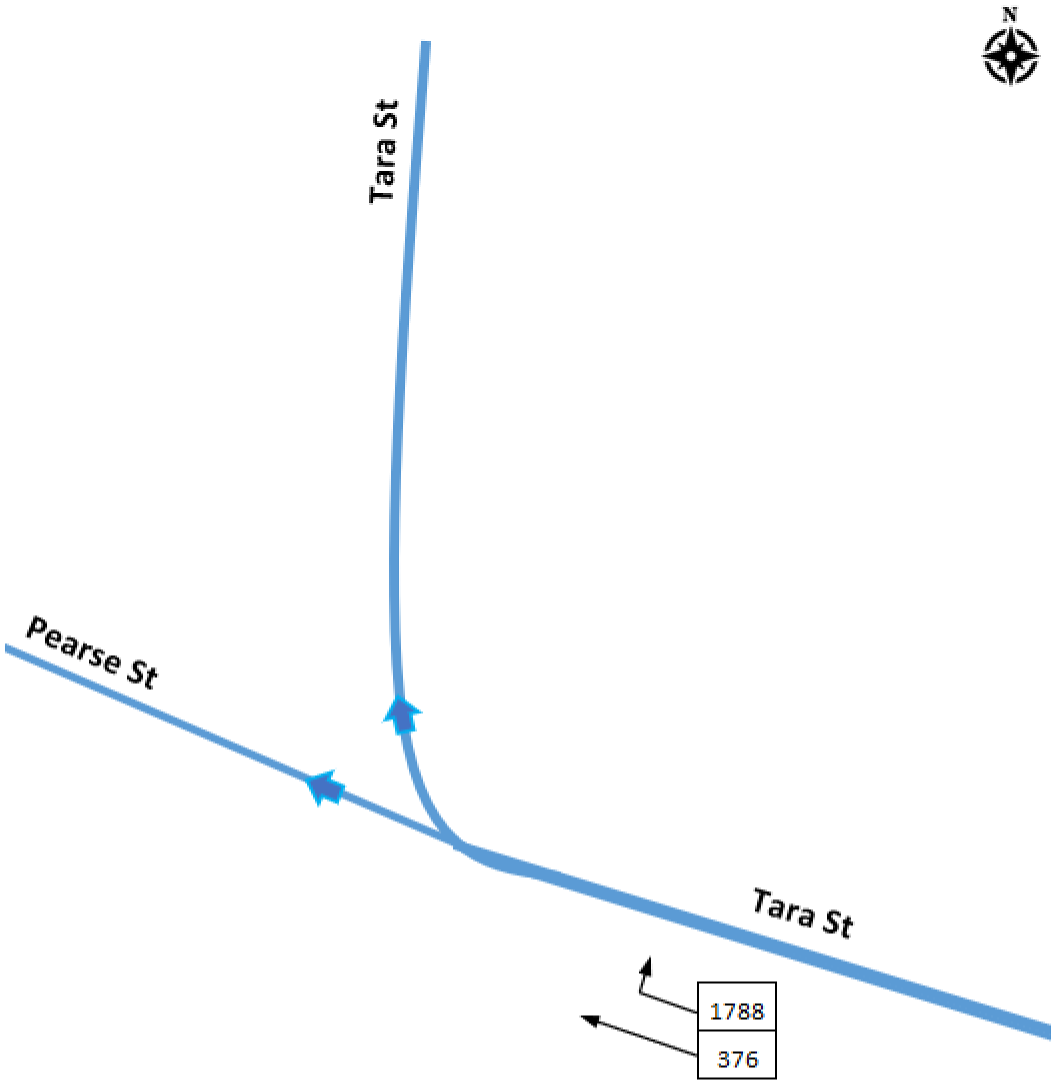


Figure 7.6: Tara Street / Pearse Street – PM 2018 Baseline Flows

Contents

1. Introduction

1.1 Background

Jacobs/IDOM has been commissioned to undertake the Environmental Impact Assessment Report (EIAR) in support of the proposed Dublin MetroLink project (hereafter referred to as the Project). The EIAR is being prepared to assess the environmental impacts of the Project, including in relation to traffic and transport.

This Traffic and Transportation Assessment (TTA) assesses the operational impacts associated with the Charlemont station on the Traffic and Transport network in the local area. TTA's have been prepared for each individual station as well as an overall TTA for the Project.

Jacobs/IDOM has also been commissioned to undertake a Scheme Traffic Management Plan (STMP). The STMP is a standalone report within the EIAR. The STMP assesses the impact of the construction of the Project on all road users and proposes mitigation measures where appropriate.

A summary of the TTAs and STMP will be included within the Traffic and Transportation chapter of the EIAR.

1.2 Assessment Scenarios

In order to provide a rounded assessment of the Project, its impacts have been reviewed for a range of future years, and in the context of two alternative future scenarios. The forecast years are 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). As outlined in Table 1.1, Scenario A includes the Project and committed transport schemes only, while Scenario B includes a range of further planned schemes depending on the forecast year.

Table 1.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project
Do Minimum Scenario	Committed transport schemes in the absence of the Project
Do Something - Scenario A	Scenario with the Project and committed transport schemes only.
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for Opening year (2035) and planned schemes under the Transport Strategy for the GDA for the Design Year (2050) and the Forecast Year (2065)

Committed transport schemes in the Do Minimum scenario and in Scenario A, that have been progressed through planning and are either under construction or are programmed into the capital expenditure budget, include, but are not limited to:

- Luas Green Line Capacity Enhancement- Phase 1;

- BusConnects Dublin Area Bus Network Redesign; and,
- Bus Connects Fares and Ticketing.

Scenario B represents the likely future receiving environment and is based on the delivery of the schemes identified within the National Development Plan for 2035, and on the implementation of the NTA's Greater Dublin Area (GDA) Transport Strategy for 2050 and 2065. As such, this scenario considers the cumulative impacts of interactions between other projects that are most likely to impact on transport movements in the area. Schemes included in this scenario are, but are not limited to:

- Luas Green Line Capacity Enhancement- Phase 2;
- Luas Finglas;
- Luas Lucan;
- BusConnects Core Bus Corridors (planned 16 corridors); and
- DART+.

More information on each modelled scenario is available in the Transport Modelling Plan (Appendix A9.3).

1.3 Project Overview

The Project will be a high-capacity, high frequency rail line running from Swords to Charlemont, linking Dublin Airport, Irish Rail, the Dublin Area Rapid Transit (DART), Dublin Bus and Luas services, improving integration across public transport network in the Greater Dublin Area (GDA).

As well as linking major transport hubs, the proposed Project will connect key destinations including Swords, Ballymun, the Mater Hospital, the Rotunda, Dublin City University and Trinity College with much of the 19-kilometre route running underground.

When operations commence, there will be a service every 3 minutes during peak periods. This can rise to a service every 90 seconds, with the system capable of carrying a peak line flow of 20,000 passengers per hour in each direction.

1.3.1 Charlemont Station

Charlemont Station will be built south of the Grand Canal, east of Charlemont Luas stop and west of Dartmouth Square, as shown in Figure 1.1. The station will be integrated with the redevelopment of the Carroll's Building site.

The internal road layout forming part of the new Hines development and providing vehicle access to the basement of the new development will be reinstated following the proposed Project construction works. A pedestrian crossing will be provided over Grand Parade, whilst station access will be provided via Dartmouth Road.

Pedestrians will be able to access the underground platform from the southern side of Grand Parade and from the northern side of Dartmouth Road. Each entrance will have escalator access, with a passenger lift at the Grand Parade entrance to facilitate interchange with the Luas Green Line. The station layout will tie-in with the existing footpath in order to facilitate interchange with Charlemont Luas station. Interchange will also be possible with the proposed Bus Network Redesign with three City-Bound routes serving Ranelagh Road to the west of the station. The E Spine also serves Leeson Street to the east of the station.

The proposed bike parking located at the southern entrance of the station will be accessed by the existing cycle lanes eastbound and westbound on Grand Parade, and from cycle lanes present on Ranelagh Road to access Dartmouth Road. The proposed bike parking will be double-decker with a capacity of 162 bike spaces. A Dublin Bike parking hub will also be present with a capacity for 20 bike stands.

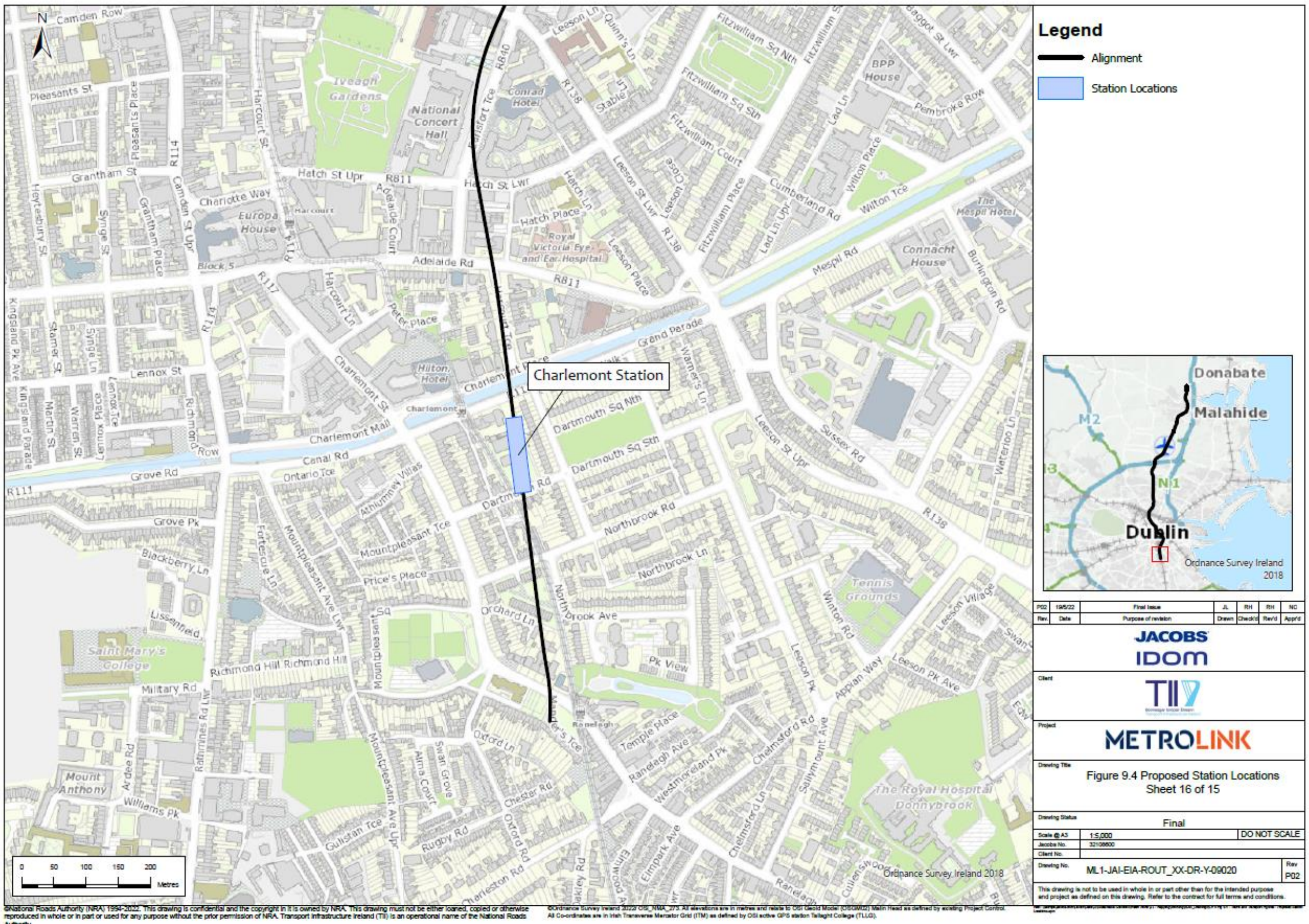


Figure 1.1: Proposed Charlemont Station Location

2. Policy Context

Reference should be made to the Chapter 3 of the Overall Project TTA and Planning Policy Report (ML1-JAI-PLD-ROUT_XX-RP-Y-00020) for further detail on the overall project in relation to key national and regional policies.

The National Spatial Strategy states that in order to promote sustainable development, it is essential to consolidate the physical growth of Dublin City. This should be supported by effective land use policies for the urban area which underpin increased investment in high quality public transport infrastructure. It outlines a number of requirements that are key to creating a compact and economically vibrant city including;

- The effective integration of land use and transportation policy: and
- Facilitating the movement of people and goods through an effective public transport system.

The Regional Planning Guidelines promote the consolidation of development within the metropolitan area, and the achievement of sustainable densities in tandem with a much-enhanced multi-modal transport system.

The Transport Strategy for the Greater Dublin Area 2016-2035 and the Regional Planning Guidelines are required under legislation to be consistent with each other, and therefore the purpose of the Strategy is "to contribute to the economic, social and cultural progress of the Greater Dublin Area by providing for the efficient, effective and sustainable movement of people and goods." The Strategy sets out the necessary transport provision for the period up to 2035, to achieve this objective for the region, including the provision of the Metro.

Transport Strategy for the Greater Dublin Area 2016-2035 identified the most appropriate transport modes and integrated transport network solutions to be implemented in order to meet demand, requiring for the proposed Project to extend southwards to interchange with the Luas Green Line, as shown in Figure 2.1. Since the publishing of the GDA strategy, the emerging preferred option for the Project extends southwards via a tunnel and joins the Luas Green Line at Charlemont station.

Figure 2.1: 2035 Overall Metropolitan Heavy and Light Rail Network

Under the Greater Dublin Area Cycle Network Plan, the R111 Grand Parade is considered a secondary cycle route, however Ranelagh Road/Charlemont Street and Charlemont Place form part of a primary cycle route at the south of the city.

Under the Bus Network Redesign, Charlemont is proposed to be served by the A Spine to the west of the station on Rathmines Road Lower, and the E Spine on Leeson Street Upper to the east of the station. These routes will serve the area every 10-15 minutes. Other City Bound routes 10, 11 and 12 from Stepaside/Sandyford Village to Merrion Square, along Ranelagh Road are closer to the station, however they are less frequent, running every 30-60 minutes.

2.1 Dublin City Council Development Plan (2016-2022)

The overarching theme of the local policy regarding movement is “helping to build an integrated transport network and encouraging the provision of greater choice of public transport and active travel.”[1]

Based on review of the Dublin City Council Development Plan (2016 – 2022) it is the Policy of Dublin City Council (DCC):

SC19: To promote the development of a network of active, attractive and safe streets and public spaces which are memorable, and include, where appropriate, seating, and which encourage walking as the preferred means

[1] Dublin City council - Dublin City Development Plan 2016–2022: Written Statement; Section 1.2 (e)

of movement between buildings and activities in the city. In the case of pedestrian movement within major developments, the creation of a public street is preferable to an enclosed arcade or other passageway.

SC20: To promote the development of high-quality streets and public spaces which are accessible and inclusive, and which deliver vibrant, attractive, accessible and safe places and meet the needs of the city's diverse communities.

MT2: Whilst having regard to the necessity for private car usage and the economic benefit to the city centre retail core as well as the city and national economy, to continue to promote modal shift from private car use towards increased use of more sustainable forms of transport such as walking, cycling and public transport, and to co-operate with the National Transport Authority (NTA), Transport Infrastructure Ireland (TII) and other transport agencies in progressing an integrated set of transport objectives. Initiatives contained in the government's 'Smarter Travel' document and in the NTA's draft transport strategy are key elements of this approach.

MT3: To support and facilitate the development of an integrated public transport network with efficient interchange between transport modes, serving the existing and future needs of the city in association with relevant transport providers, agencies and stakeholders.

MT4: To promote and facilitate the provision of Metro, all heavy elements of the DART Expansion Programme including DART Underground (rail interconnector), the electrification of existing lines, the expansion of Luas, and improvements to the bus network in order to achieve strategic transport objectives.

MT5: To work with the relevant transport providers, agencies and stakeholders to facilitate the integration of active travel (walking, cycling etc.) with public transport, thereby making it easier for people to access and use the public transport system.

MT6: (i) To work with Iarnród Eireann, the NTA, Transport Infrastructure Ireland (TII) and other operators to progress a coordinated approach to improving the rail network, integrated with other public transport modes to ensure maximum public benefit and promoting sustainable transport and improved connectivity.

(ii) To facilitate the needs of freight transport in accordance with the National Transport Authority's Transport Strategy for the Greater Dublin Area 2016 – 2035.

MT7: To improve the city's environment for walking and cycling through the implementation of improvements to thoroughfares and junctions and also through the development of new and safe routes, including the provision of foot and cycle bridges. Routes within the network will be planned in conjunction with green infrastructure objectives and on foot of (inter alia) the NTA's Cycle Network Plan for the Greater Dublin Area, and the National Cycle Manual, having regard to policy GI5 and objective GIO18.

MT8: To work with, and actively promote, initiatives by relevant agencies and stakeholders such as An Taisce's 'Green Schools' initiative and the NTA's Smarter Travel Unit, to promote active travel in schools and communities, recognising the health and social benefits of walking and cycling as well as the environmental benefits.

MT9: To promote Bike and Ride at public transport hubs by providing secure, dry, bike parking facilities.

MT10: To provide 30kph speed limits and traffic calmed areas at appropriate locations throughout the city and subject to stakeholder consultation.

MT11: To continue to promote improved permeability for both cyclists and pedestrians in existing urban areas in line with the National Transport Authority's document 'Permeability – a best practice guide'. Also, to carry out a permeability and accessibility study of appropriate areas in the vicinity of all Luas, rail and BRT routes and stations, in co-operation with Transport Infrastructure Ireland and the National Transport Authority.

2.2 Draft Dublin City Council Development Plan (2022-2028)

Building on the objectives of the Dublin City Council Development Plan 2016-2022, the Draft Dublin City Council Development Plan 2022-2028 recognises the opportunities presented by MetroLink to achieve effective integration of land-use and transportation in the area.

SMT20: Key Sustainable Transport Projects:

- To support the expeditious delivery of key sustainable transport projects including MetroLink, BusConnects, DART+ and Luas Expansion Programme so as to provide an integrated public transport network with efficient interchange between transport modes, serving the existing and future needs of the city and region.

In addition, the Draft Plan highlights the role the Project will play in delivering opportunities for developing the public ream around proposed stations

2.3 Local Policy Context

Charlemont Street is considered a Major Strategic Pedestrian Route under the Dublin City Centre Transport Study.

The Dublin City Centre cycle parking strategy recommends the development of new, and the expansion of existing, on-street sites in order of ranking and targeting specific locations based on "real time" demand. It further recommends the expansion of sites with latent capacity as demand increases.

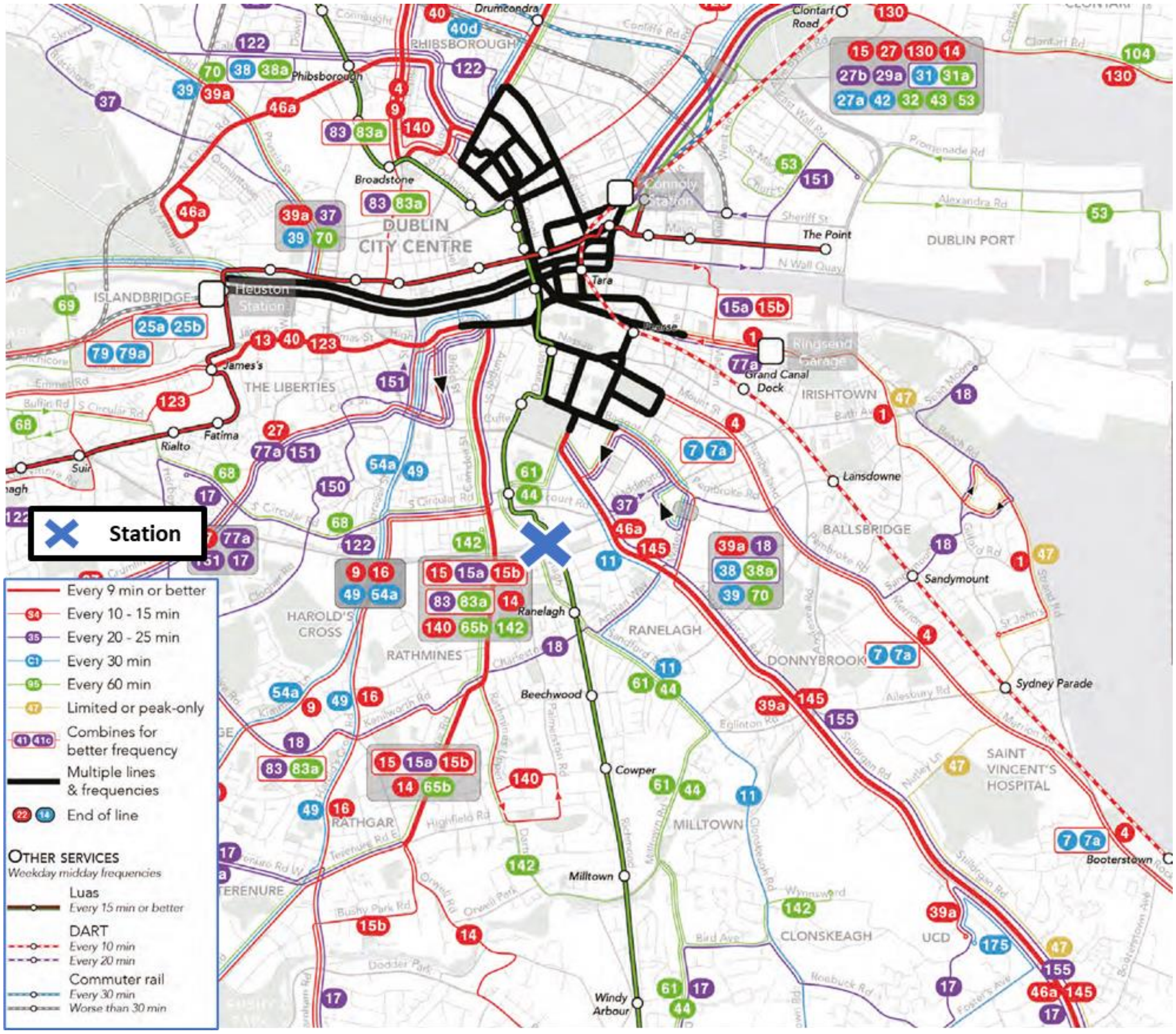
3. Baseline Conditions

This section describes the existing receiving environment within the vicinity of the Charlemont Station and the wider environs, and identifies the future receiving environment for all modes of transport if conditions are planned to change in advance of the construction of the Project, such as the delivery of other proposed infrastructure projects.

3.1 Existing Public Transport Network

As shown in Figure 3.1, the area surrounding the Charlemont Station is served by the Luas Green Line which runs every 15 minutes or better. The nearest bus service runs every 60 minutes, with buses that stop every 9 minutes or less within a 5-minute walk.

As shown on Figure 3.2, there are approximately 22 bus stops within a 600m buffer from the station, most of them located along Leeson Street Upper and Rathmines Road Lower. The nearest bus stop is located south-west of the station on the R117 Ranelagh Road, this stop is serviced by route 44 from Enniskerry towards Dublin City University and route 61 from Rockbrook towards Eden Quay.



(Base Source: www.busconnects.ie)

Figure 3.1: Existing bus network around Charlemont Station

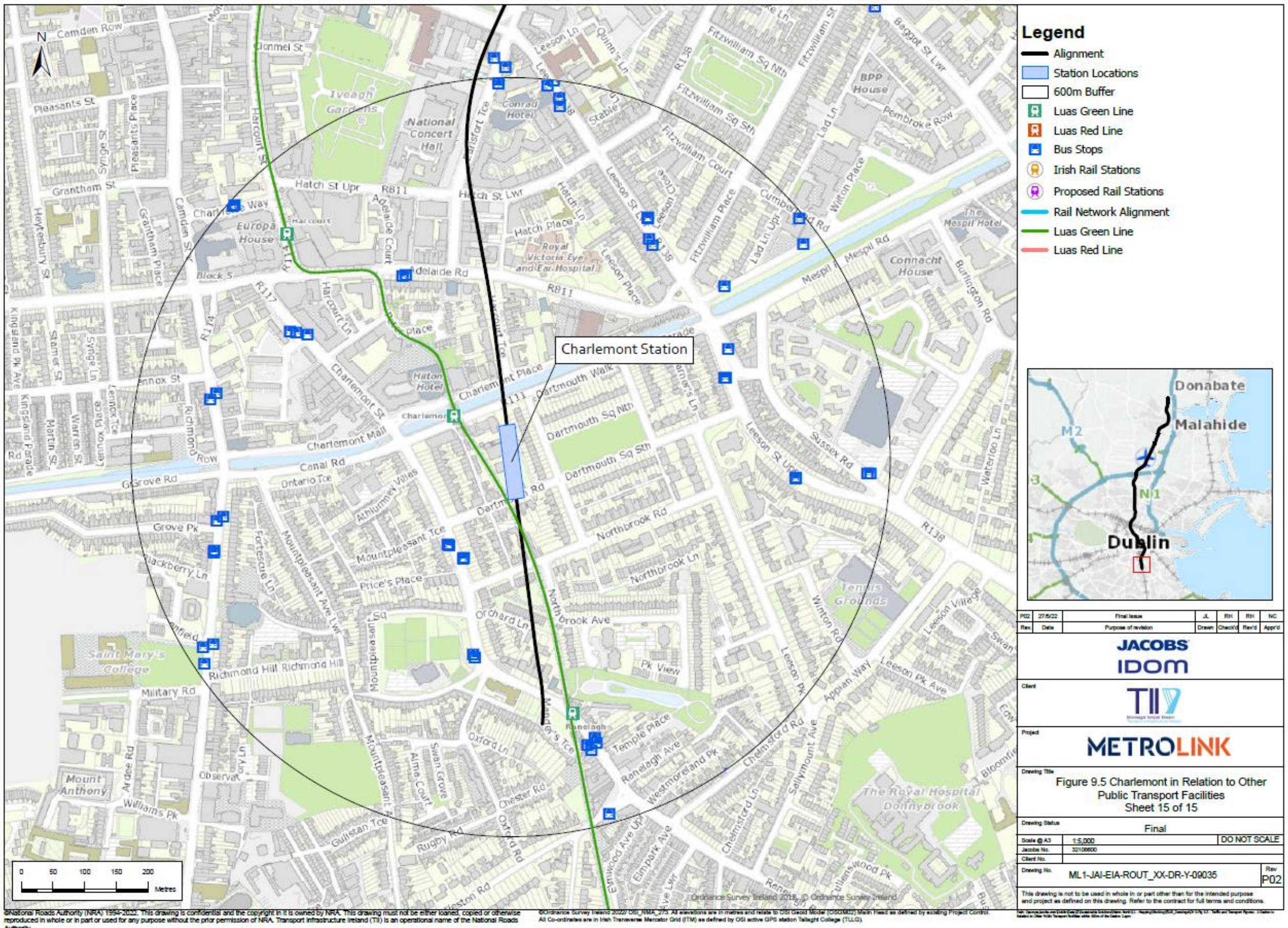
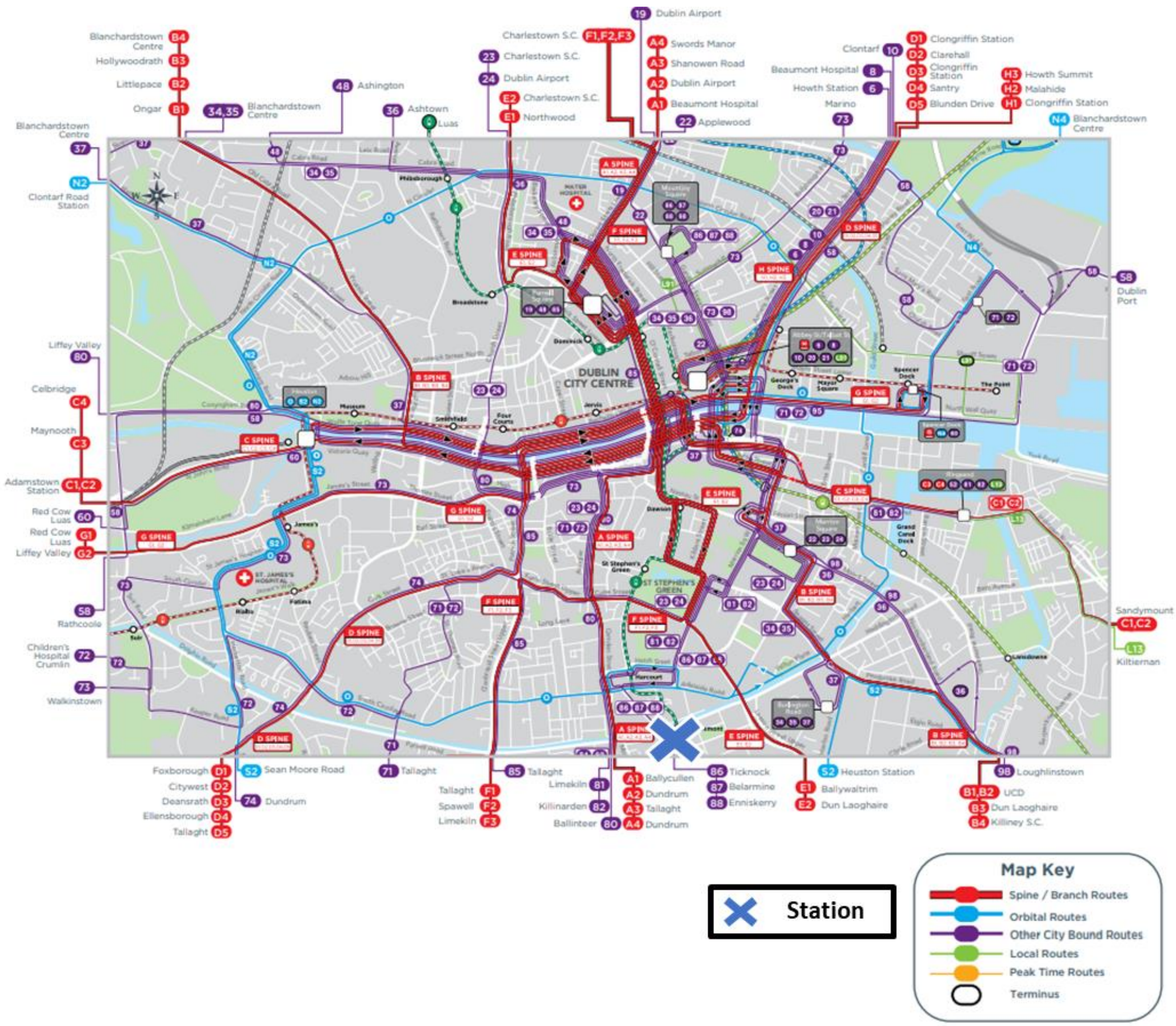


Figure 3.2: Transport facilities within 600m buffer

3.2 Future Receiving Environment – Public Transport

The Charlemont Station is also located within a 5-minute walking distance of the Bus Network Redesign proposed A Spine and E Spine as shown in Figure 3.3 and is in close proximity to Orbital and Other City Bound Routes. The A Spine has a frequency of between 12 and 15 minutes, and the E Spine has a frequency of between 8 and 10 minutes on weekdays. The nearby S2 Orbital route serving Heuston-Kimmage-Ballsbridge-Poolbeg has a frequency of 15 minutes.



(Base Source: www.busconnects.ie)

Figure 3.3: Proposed Bus Network Redesign around Charlemont Station

3.3 Existing Road Network

The road network in the vicinity of the Charlemont Station comprises of regional roads R111 (Grand Parade/Canal Road), the R117 (Ranelagh Road/Charlemont Street), the R138 (Leeson Street Upper) in the east, as well as Dartmouth Road in the south, Rathmines Road Lower in the west and Charlemont Place in the north.

Grand Parade is a two-way single carriageway orbiting Dublin City Centre between Kilmainham Gaol in the west and Irishtown in the east. In the vicinity of Charlemont Station, the R111 is approximately 6m wide and has two traffic lanes with alongside cycle lanes. There are no bus lanes present on this road.

Ranelagh Road to the west of the station is a 9m wide two-way carriageway with two lanes southbound, and one lane northbound. There are no bus lanes on this road. Charlemont Street is a two-way single lane carriageway (approximately 9m wide) with a partial bus lane northbound towards Dublin City Centre.

Dartmouth Road is a two-way single carriageway of around 7m width and with no bus lanes present in either direction. This is a largely residential area with parking on-street parking on both sides of the road.

Charlemont Place is a private access two-way road; however, lanes are not marked beyond the first junction. There are no bus lanes present on this road.

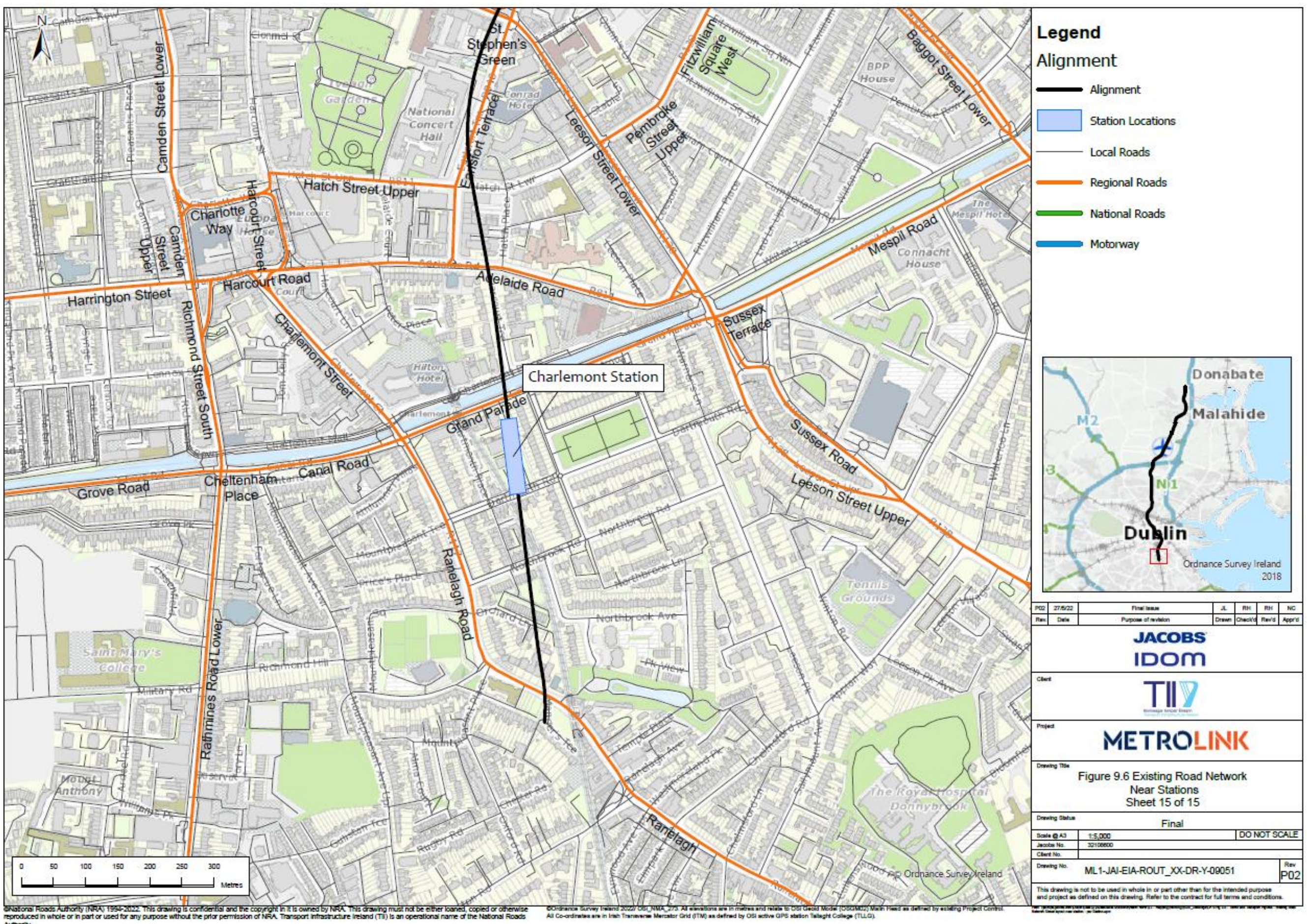


Figure 3.4: Street layout near Charlemont Station

3.3.1 Junction Turning Count Locations

The Data Collection Report (ML1-JAI-TRA-ROUT_XX-RP-Y-00023) details the methodology and specification of traffic surveys undertaken for the Project. The survey locations relevant to Charlemont Station are shown in Table 3.1. Vehicle classifications used for the survey were Car, LGV, OGV1, OGV2, PSV, Motorcycle and Pedal Cycle. PCUs values were also reported using appropriate conversion factors for each vehicle classification. The resulting PCU values from the survey results have been used for the LinSig modelling.

Table 3.1: Survey Locations Around Charlemont Station

Junction	Type of Survey
R111 (Grand Parade)/ R117 (Ranelagh Road)	Classified junction turning counts (CJTC)
R117 (Ranelagh Road)/ Dartmouth Road	CJTC
R111 (Grand Parade)/ Mespil Road	CJTC

3.3.2 Forecast Traffic Growth

Forecast traffic growth rates have been obtained from the Eastern Regional Model (ERM) for future years 2035, 2050 and 2065, for the appropriate scenario.

3.4 Future Receiving Environment – Road Network

There will be no change to the existing road layout in the future receiving environment at Charlemont Station.

3.5 Existing Pedestrian Network

The external footway network is well established, with footways provided alongside principal streets. Pedestrian crossing facilities are provided at the Charlemont Street/R111 signalised junction, with tactile paving on all links. All footway provisions are considered to be of high sensitivity.

Dartmouth Road is a predominantly residential area with footways with a clear footpath width of 3m.

Charlemont Street has a clear footpath width of 1.9m due to the presence street lighting and signal boxes located on the bridge between Ranelagh Road and Charlemont Street. This street has signalised pedestrian crossings with dropped kerbs and tactile paving.

3.5.1 Pedestrian Link Counts

The Data Collection Report (ML1-JAI-TRA-ROUT_XX-RP-Y-00023) details the locations around Charlemont Station where pedestrian surveys were undertaken.

3.5.2 Baseline Pedestrian Accessibility Review

A baseline accessibility assessment was undertaken to establish walking provision relevant to the proposed Charlemont Station. Catchment maps prepared for the accessibility analysis for walking are based on two criteria, the average speed for each mode and the existing road network. Therefore, maps do not reflect existing access restrictions for private roads and motorised roads.

Figure 3.5 illustrates a 5min walking, 10min walking and 15min walking catchment from the Charlemont Station. Table 3.2 below lists local amenities within the 5min walking, 10min walking and 15min walking from the Charlemont Station.

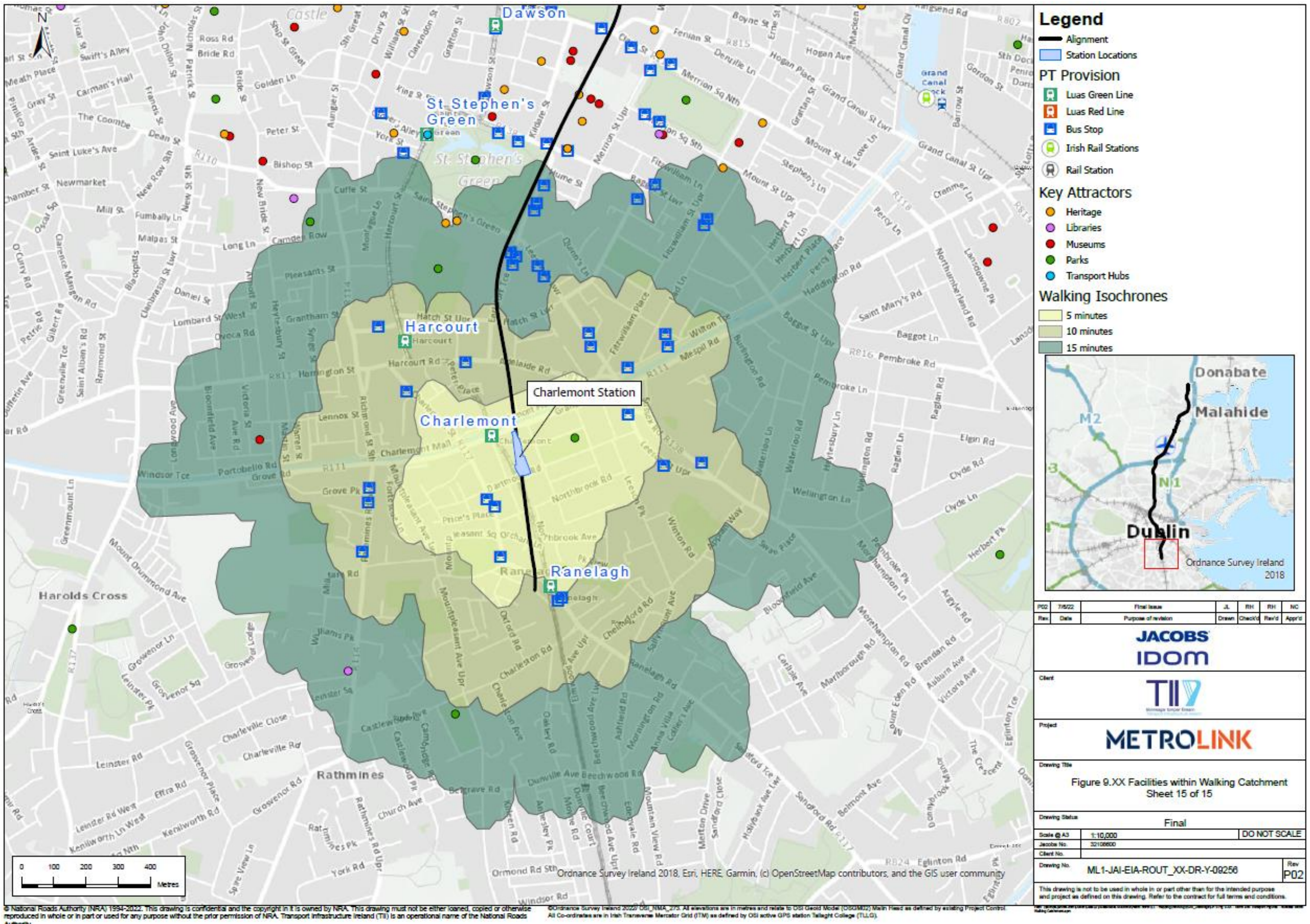


Figure 3.5: Charlemont Station Walking Catchment Area

Table 3.2 : Local facilities and amenities within walking catchment area

Facilities within 5min walking	Facilities within 10min walking	Facilities within 15min walking
Charlemont Luas Station	Royal Victoria Eye and Ear Hospital	St Stephen's Green
Hilton Dublin	Iveagh Gardens	Wexford Street
Clayton Hotel Charlemont	Harcourt Street	National Concert Hall
Construction Industry Federation (CIF)	Camden Street Upper	Amazon Ireland
	LinkedIn EMEA Head Office	Omniplex Cinema Rathmines
	Ranelagh Gardens Park and Playground	The Royal Hospital Donnybrook
	Leinster Cricket Club	Bank of Ireland Corporate Division
	National Transport Authority	Embassy of Chile
	EY	Embassy of Mexico
	Deloitte	Embassy of United Arab Emirates
	Embassy of Denmark	Embassy of Ukraine
		Embassy of Belgium
		Embassy of the Kingdom of Morocco
		Embassy of Romania

A pedestrian comfort assessment has been undertaken to assess the impact of the baseline volume of pedestrians on the network surrounding Charlemont station, shown in Figure 3.6. Links were assessed against DCC guidance in the first instance, and then against the Transport for London (TfL) Pedestrian Comfort Calculator to determine the level of comfort for the available width. The full methodology adopted is detailed in the Overall Project TTA.

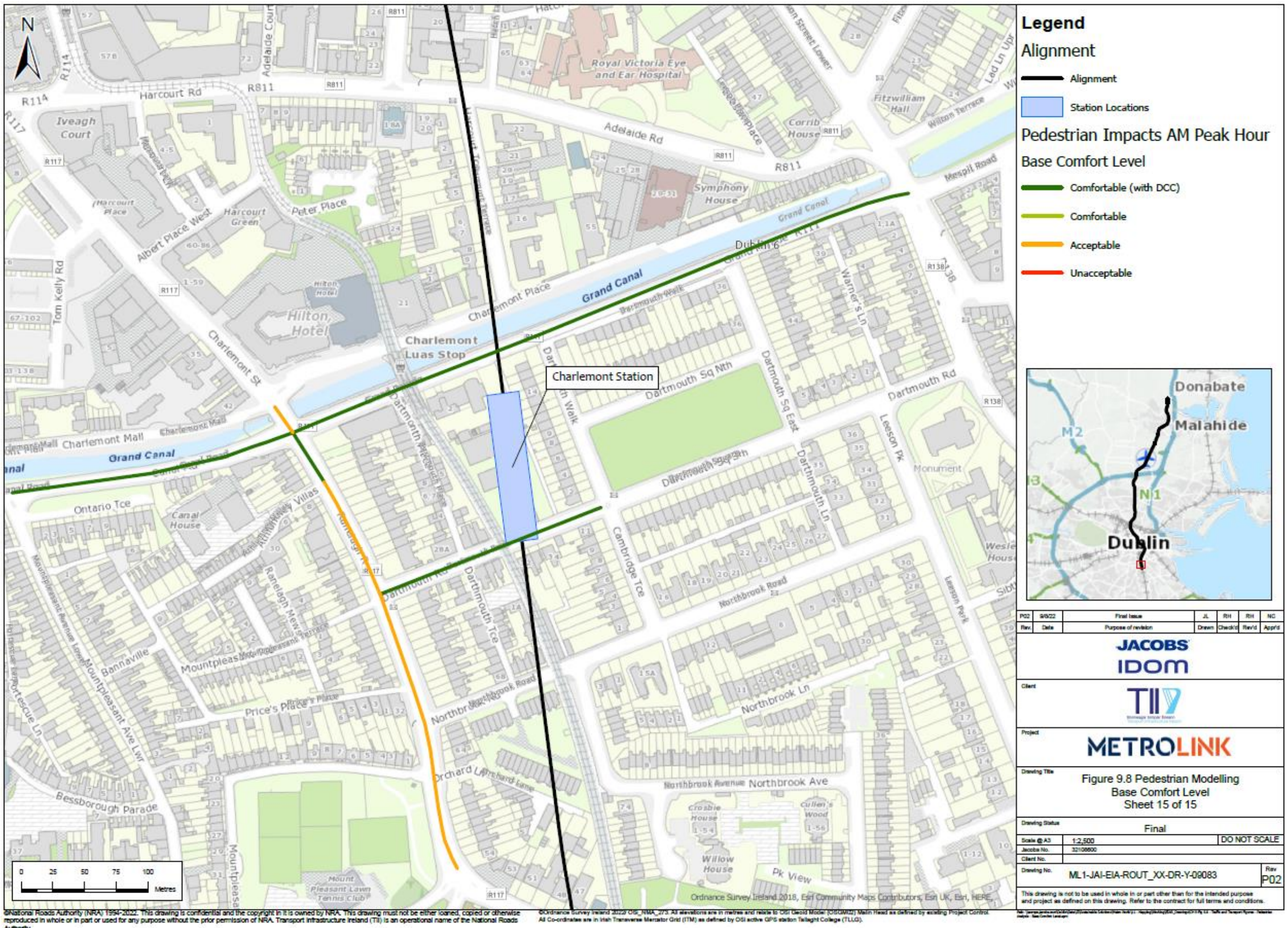


Figure 3.6: Pedestrian Comfort Assessment at Charlemont Station- Baseline

The results show that in the baseline scenario, all links meet with the DCC guidance and are deemed ‘Comfortable’, with the exception of Charlemont Street and Ranelagh Road which do not meet with DCC guidance, however they are deemed ‘Acceptable’. As such, there is a sufficient level of comfort on all links for the existing pedestrian demands.

3.6 Future Receiving Environment – Pedestrian Network

The proposed street level layout at Charlemont Station will not alter the existing pedestrian network in the area.

3.7 Existing Cycle Network

Figure 3.7 illustrates Charlemont Station within the GDA Cycle Network. Charlemont Street/Ranelagh Road is a Primary route within the network. The R111 Grand Parade contributes to the Primary network, Secondary network and minor Greenway, served by a Feeder network to the east of the station on Dartmouth Square.

Mandatory cycle lanes are present along both sides of the R111 Grand Parade, with a width of approximately 1.2m. Ranelagh Road also has mandatory cycle lanes of approximately 1.2m. Designated cycle traffic signals are also present on this link.

The cycle network ranges in both significance and sensitivity in this section, offering between a Level B and C Quality of Service across the section.

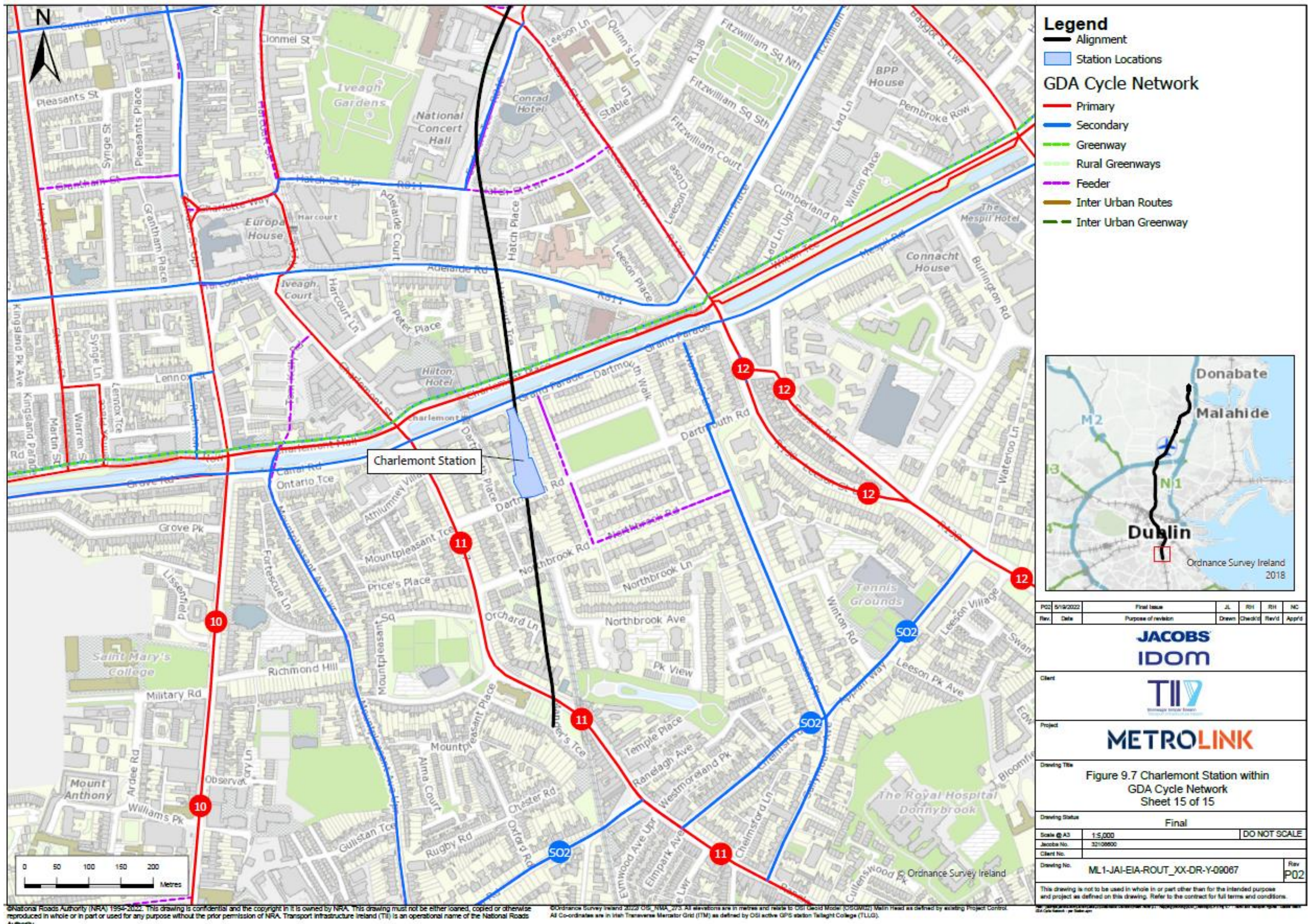


Figure 3.7: Charlemont Station within the Proposed GDA Cycle Network

3.7.1 Baseline Cycle Accessibility Review

A baseline accessibility assessment has been undertaken to establish existing cycling provision relevant to the proposed Charlemont Station. Catchment maps prepared for the accessibility analysis for cycling are based on two criteria, the average speed for each mode and the existing road network. Therefore, maps do not reflect existing access restrictions for private roads and motorised roads.

Figure 3.8 illustrates a 5min cycling and 10min cycling catchment from the Charlemont Station and the location existing bike racks and Dublin Bike stations in close proximity to the station.

Table 3.3 below lists local amenities within this catchment.

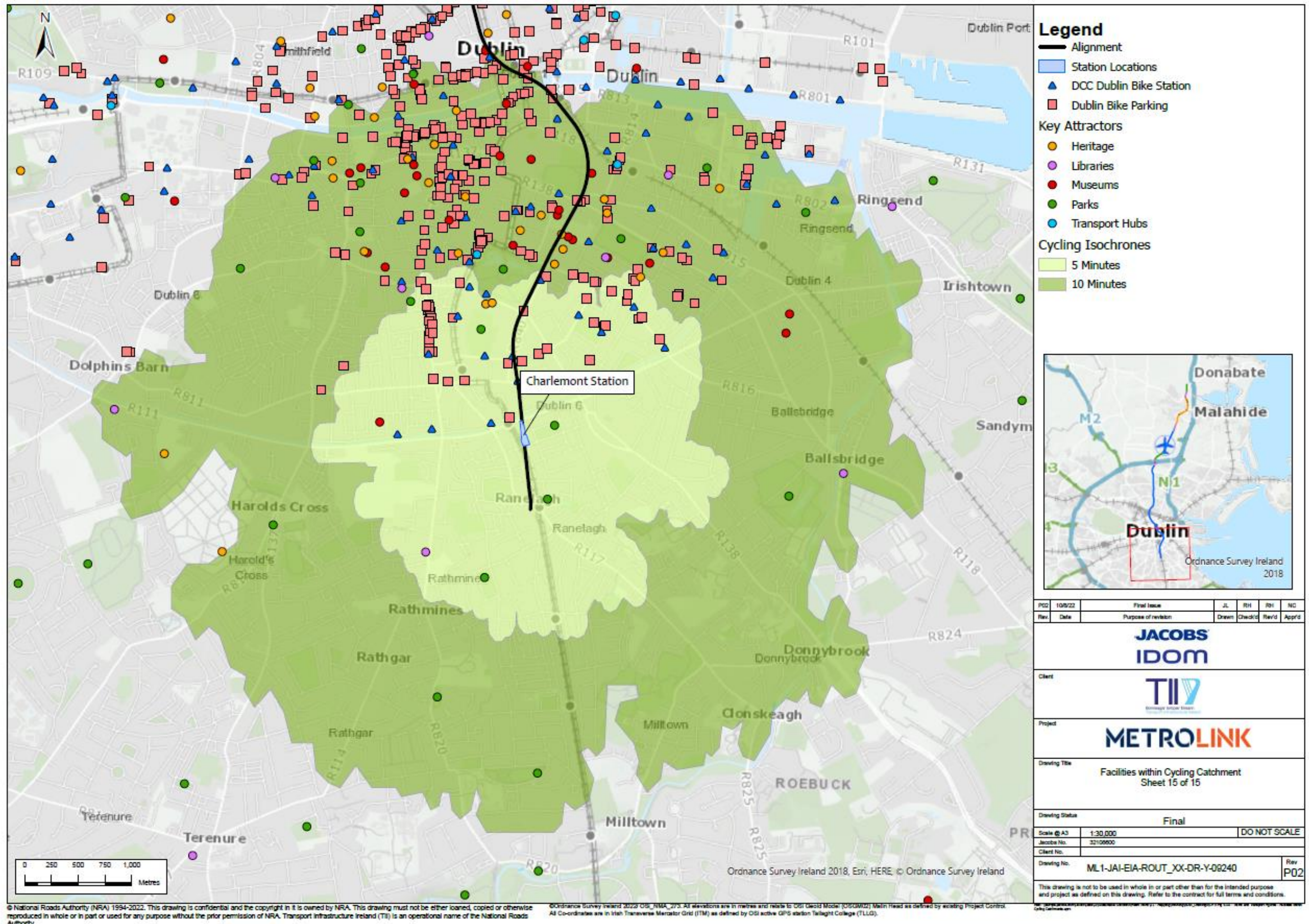


Figure 3-8: Charlemont Station Cycling Catchment Area

Table 3.3 : Local facilities and amenities within cycling catchment area

Facilities within 5min cycling	Facilities within 10min cycling
The Royal Victoria Eye and Ear Hospital	Grafton Street Shopping Area
Iveagh Gardens	Trinity College
National Transport Authority	National Museum of Ireland
Harcourt Street	National Gallery of Ireland
Camden Street Upper	Dublin Castle
LinkedIn EMEA Head Office	Temple Bar
Ranelagh Gardens Park and Playground	Technological University Dublin Campus
Leinster Cricket Club	Dublin Business School
St Stephen's Green	RDS Arena
Wexford Street	Milltown Park

Facilities within 5min cycling	Facilities within 10min cycling
National Concert Hall	Ranelagh
Amazon Ireland	Rathmines
The Royal Hospital Donnybrook	Grand Canal Docks
Bank of Ireland Corporate Division	

3.8 Future Receiving Environment – Cycle Network

The future street level layout immediately surrounding the station will maintain the existing cycle infrastructure at Charlemont Station. As part of the Bus Network Redesign, the A Spine and E Spine, will serve the Ranelagh Road and Leeson Street with designated bus lanes, whilst also providing segregated cycle lanes, where possible.

4. The Proposed Project – Charlemont Station

4.1 Site Location and Development Context

The proposed Charlemont Station is located directly under the junction of the R111 (Grand Parade) and Dartmouth Square West, east of Dartmouth Place and the existing Luas Green Line. Figure 4.1 illustrates the location of the proposed station.

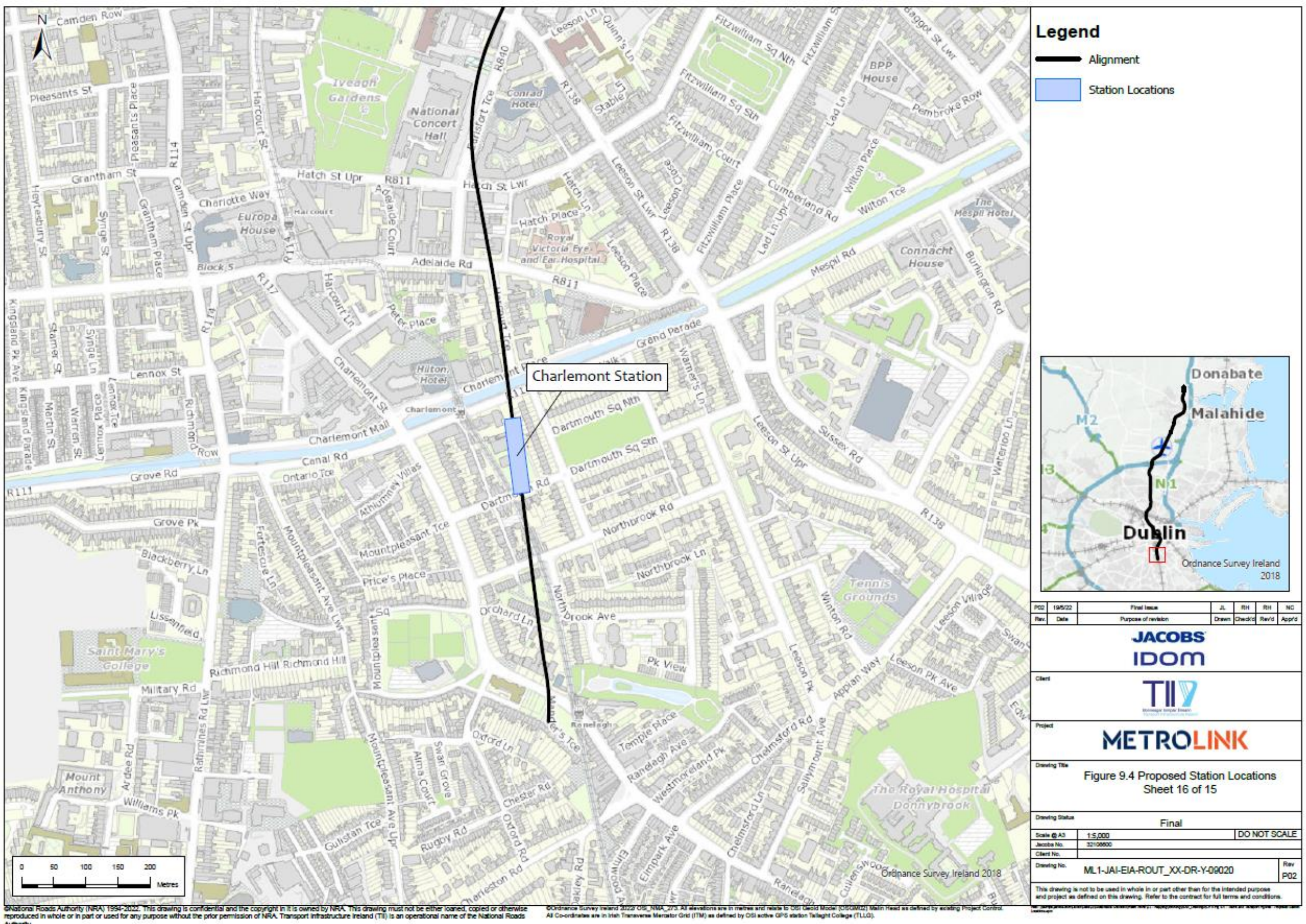


Figure 4.1: Proposed Site Location

Figure 4.2 shows the proposed passenger access/egress points to the proposed station. It also illustrates the proposed alteration to the road layout in the vicinity of the proposed station. The site plan also highlights the proposed road improvements upon station completion. Stairs are also provided at the north of the station to facilitate interchange with the Luas Greenline.

There will be no vehicular access to the Charlemont Station during the Operational Phase, with the access road to the east of the station facilitating access to the office development parking areas. Charlemont Station proposal will not provide car parking facilities within the development area.

To facilitate the movement of passengers from the surrounding catchment, 162 bicycle parking spaces will be provided at Charlemont Station.

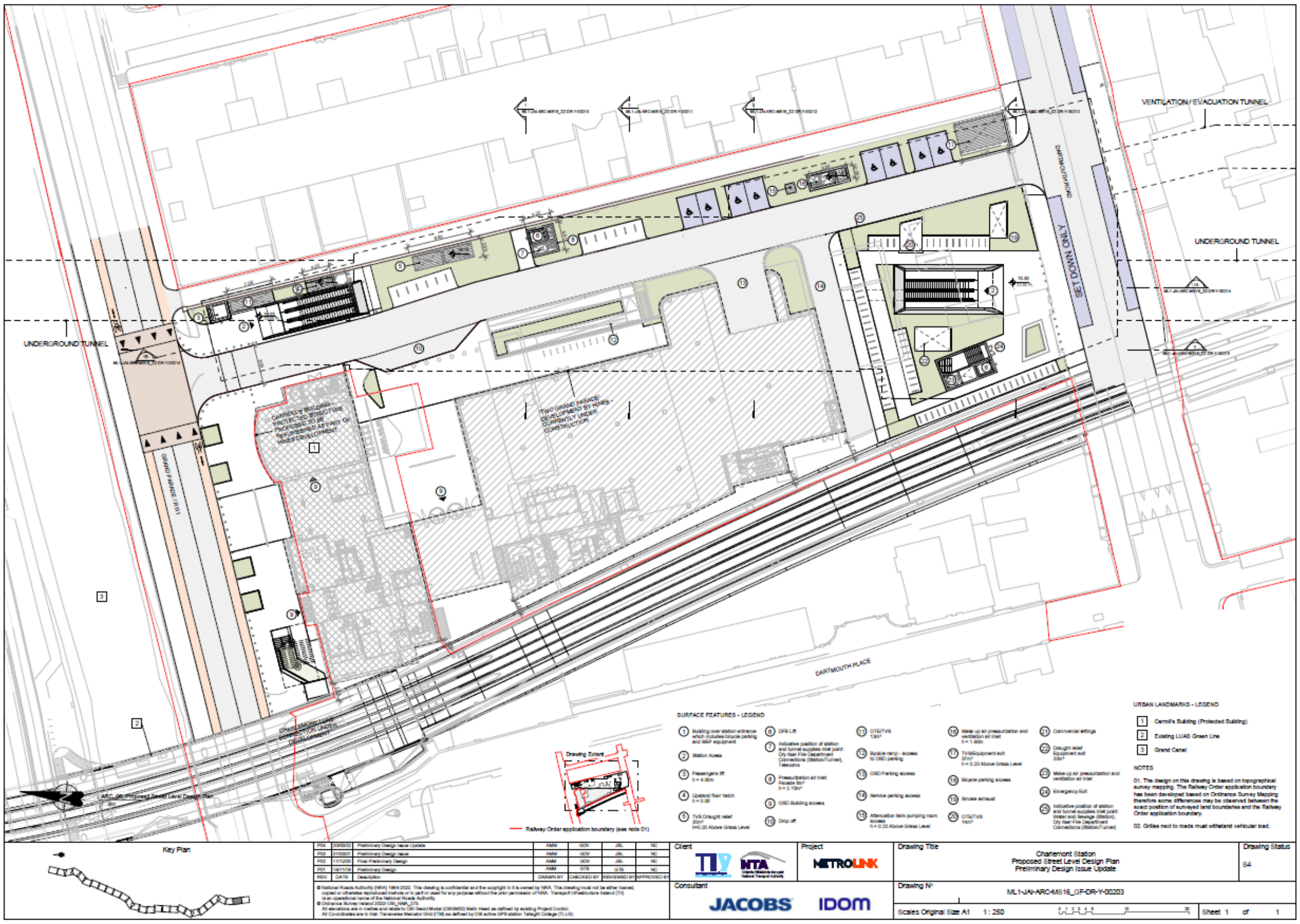


Figure 4.2: Charlemont Station Detailed Proposal

5. Trip Generation / Trip Attraction

5.1 Operational Phase

Traffic estimates associated with the Charlemont Station operational phase have been established by utilising the National Transport Authority's (NTA) East Regional Model (ERM). The ERM provides a comprehensive representation of multi-modal travel patterns across the Greater Dublin Area and is a tool for the testing and appraisal of the Project.

5.1.1 Passenger Boarding and Alighting

Passenger demand modelling has been used to predict the numbers of passengers boarding and alighting at each station, and the resulting passenger load on MetroLink vehicles, for the years 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). The scenarios considered for assessment for each of the years 2035, 2050 and 2065 are outlines in Table 5.1.

Table 5.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project
Do Minimum Scenario	Committed transport schemes in the absence of the Project
Do Something - Scenario A	Scenario with the Project and committed transport schemes only.
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for Opening year (2035) and planned schemes under the Transport Strategy for the GDA for the Design Year (2050) and the Forecast Year (2065)

5.1.1.1 Boarding and Alighting Volumes

Table 5.2 to Table 5.9 show boarding, alighting and interchange numbers for the Charlemont Station during peak hours, along with the destinations and origins of passengers in the AM peak. All data has been retrieved from the ERM developed by the NTA. Data in this section is reported for the busiest hour within each of the following peak periods:

- AM: busiest hour between 07:00 – 10:00;
- LT (lunch time): busiest hour between 10:00 – 13:00;
- SR (school run): busiest hour between 13:00 – 16:00; and
- PM: busiest hour between 16:00 – 19:00

Figure 5.1 presents the volume of boarding and alighting passengers at Charlemont Station over the 12hr peak period (07:00-19:00) in both Scenario A and Scenario B. Scenario A has a higher volume of boarding passengers, reaching over 22,000 passengers in 2065, compared to 19,000 passengers in Scenario B. Similarly, Scenario A also has a higher volume of alighting passengers compared to Scenario B, with almost 22,000 passengers in 2065, compared to 21,000 passengers in Scenario B 2065.

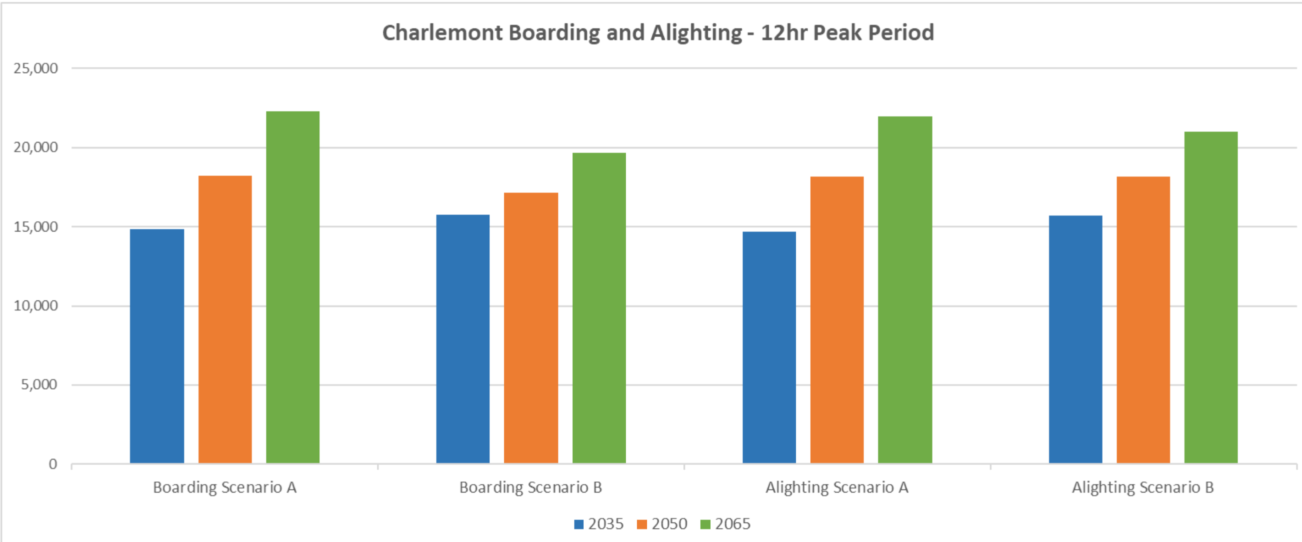


Figure 5.1: Charlemont 12hr Boarding and Alighting in Scenario A and Scenario B

5.1.1.2 Boarding and Alighting Volumes: Scenario A

Table 5.2 to Table 5.4 below highlight the boarding and alighting passenger numbers for Charlemont Station in Scenario A.

Table 5.2 shows the predicted boarding and alighting passenger numbers during the Opening Year, 2035. During the AM peak hour 1,700 passengers are expected to board the proposed Project at Charlemont, with 2,600 passengers alighting.

Table 5.2: Boarding and Alighting Numbers at Charlemont Station in 2035, Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	1,742	0	1,742	902	0	902	1,026	0	1,026	2,294	0	2,294
Southbound	0	2,607	0	0	1,028	0	0	1,037	0	0	1,304	0

Source: East Regional Model (ERM)

Table 5.3 shows the predicted boarding and alighting passenger numbers during the year 2050. During the AM peak hour, 2,000 passengers are expected to board at Charlemont, and 3,100 passengers are expected to alight. During the PM peak hour, 2,700 passengers are expected to board the Project at Charlemont while 1,500 passengers are expected to alight.

Table 5.3: Boarding and Alighting Numbers at Charlemont Station in 2050, Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	2,020	0	2,020	1,189	0	1,189	1,285	0	1,285	2,775	0	2,775
Southbound	0	3,138	0	0	1,369	0	0	1,324	0	0	1,552	0

Source: East Regional Model (ERM)

Table 5.4 below shows the boarding and alighting passenger numbers for the year 2065. During the AM peak hour, 2,300 passengers are expected to board at Charlemont Station and 3,800 passengers are expected to alight. During the PM peak hour, 3,400 passengers are estimated to board while 1,800 will alight.

Table 5.4: Boarding and Alighting Numbers at Charlemont Station in 2065, Scenario A

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	2,393	0	2,393	1,443	0	1,443	1,653	0	1,653	3,402	0	3,402
Southbound	0	3,803	0	0	1,626	0	0	1,610	0	0	1,884	0

Source: East Regional Model (ERM)

5.1.1.3 Boarding and Alighting Volumes: Scenario B

Table 5.5 to Table 5.7 below highlight the boarding and alighting passenger numbers for Charlemont Station in Scenario B.

Table 5.5 shows the predicted boarding and alighting passenger numbers during the Opening Year, 2035. During the AM peak hour 1,900 passengers are expected to board the Project at Charlemont, with 2,800 passengers alighting. During the PM peak hour, 2,400 passengers are expected to board, and 1,300 passengers are expected to alight.

Table 5.5: Boarding and Alighting Numbers at Charlemont Station in 2035, Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	1,911	0	1,911	914	0	914	1,086	0	1,086	2,426	0	2,426
Southbound	0	2,799	0	0	1,088	0	0	1,137	0	0	1,377	0

Source: East Regional Model (ERM)

Table 5.6 shows the passenger boarding and alighting numbers during the 2050 year. During the AM peak hour, it is anticipated 2,000 passengers will board the Project at Charlemont Station and head north while 2,700 southbound passengers will alight. During the PM peak, 2,200 passengers are expected to board at Charlemont Station and head north while 1,600 southbound passengers are expected to alight.

Table 5.6: Boarding and Alighting Numbers at Charlemont Station in 2050, Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	2,026	0	2,026	1,237	0	1,237	1,312	0	1,312	2,259	0	2,259
Southbound	0	2,795	0	0	1,409	0	0	1,438	0	0	1,673	0

Source: East Regional Model (ERM)

For the year 2065, during the AM peak hour, 2,200 passengers are expected to board the Project at Charlemont Station and 3,200 passengers are expected to alight. During the PM peak hour, 2,500 passengers are expected to board the Project and 1,800 are estimated to alight.

Table 5.7: Boarding and Alighting Numbers at Charlemont Station in 2065, Scenario B

	AM			LT			SR			PM		
Direction	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	2,283	0	2,283	1,419	0	1,419	1,589	0	1,589	2,547	0	2,547
Southbound	0	3,298	0	0	1,650	0	0	1,681	0	0	1,836	0

Source: East Regional Model (ERM)

5.1.1.4 Public Transport Interchange Volumes

Table 5.8 and Table 5.9 present the volumes of passengers interchanging with other public transport modes at Charlemont Station for the AM and PM peak hours in 2035, 2050 and 2065 for Scenario A and Scenario B respectively. Charlemont Station is served by the Luas Green Line which runs every 15 minutes or better. The nearest bus service runs every 60 minutes, with buses that stop every 9 minutes or less within a 5-minute walk. The Charlemont Station is also located within a 5-minute walking distance of the Bus Network Redesign proposed A Spine and E Spine, as shown in section 3.2.

Interchange at Charlemont is characterised by high flows to and from the adjacent Luas stop, as well as to and from the Bus network.

Table 5.8: Transfers To/From Other Public Transport Modes in Scenario A

Scenario A									
Year	Peak	Boarding				Alighting			
		First Boarding	From Bus	From Rail/DART	From Luas	Final Stop	To Bus	To Rail/DART	To Luas
2035	AM	474	377	-	891	1,251	497	-	859
	PM	1,085	351	-	858	500	282	-	523
2050	AM	544	421	-	1,056	1,524	582	-	1,033
	PM	1,334	416	-	1,025	584	324	-	644
2065	AM	648	482	-	1,263	1,872	688	-	1,244
	PM	1,660	501	-	1,241	719	371	-	794

Source: East Regional Model (ERM)

Table 5.9: Transfers To/From Other Modes in Scenario B

Scenario B									
Year	Peak	Boarding				Alighting			
		First Boarding	From Bus	From Rail/DART	From Luas	Final Stop	To Bus	To Rail/DART	To Luas
2035	AM	525	460	-	927	1,332	561	-	906
	PM	1,167	403	-	856	502	361	-	514
2050	AM	499	433	-	1,093	1,200	521	-	1,074
	PM	1,021	373	-	864	501	404	-	767
2065	AM	556	474	-	1,253	1,454	595	-	1,250
	PM	1,135	423	-	990	516	444	-	876

Source: East Regional Model (ERM)

5.1.1.5 Distribution of Boarding and Alighting Passengers

Figure 5.2 and Figure 5.3 shows the origins and destinations of passengers arriving to board at the station and the destination of passengers alighting at Charlemont Station during the AM peak hour. The width of the lines is proportional to the number of commuters leaving/arriving at the station.

A large proportion of boarding passengers can be seen to originate to the south of the station in Ranelagh, and west of the station in Portobello. Smaller volumes of passengers are noted to access the station from a wider range of more distant locations to the west and south-east.

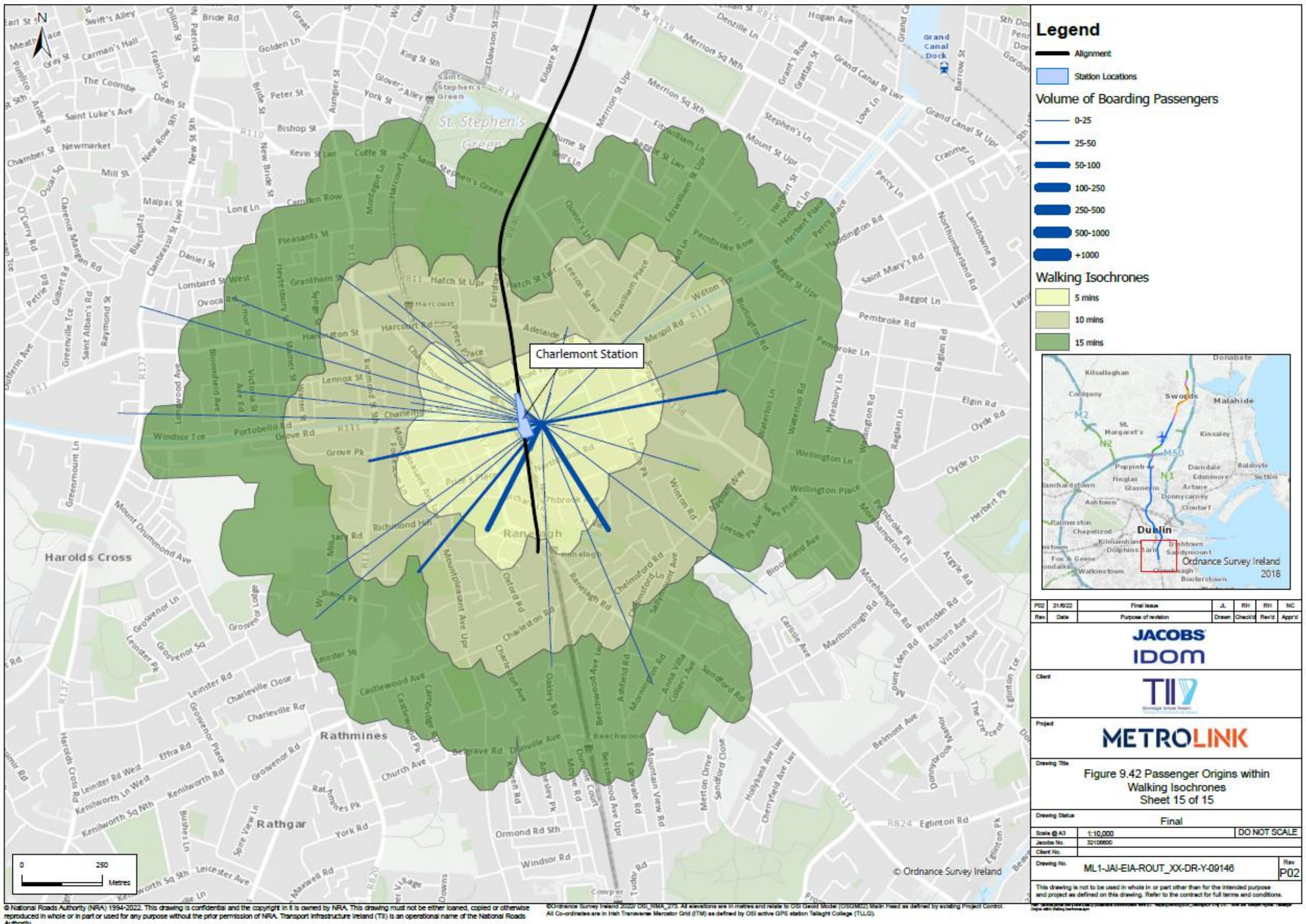


Figure 5.2: Origin of Boarding Passengers During AM peak hour and Walking Catchment Areas

The highest flows of alighting passengers are predominantly seen for destinations to the north-east towards St. Stephen's Green and north-west of the station at the Camden Street area, with lower flows elsewhere.

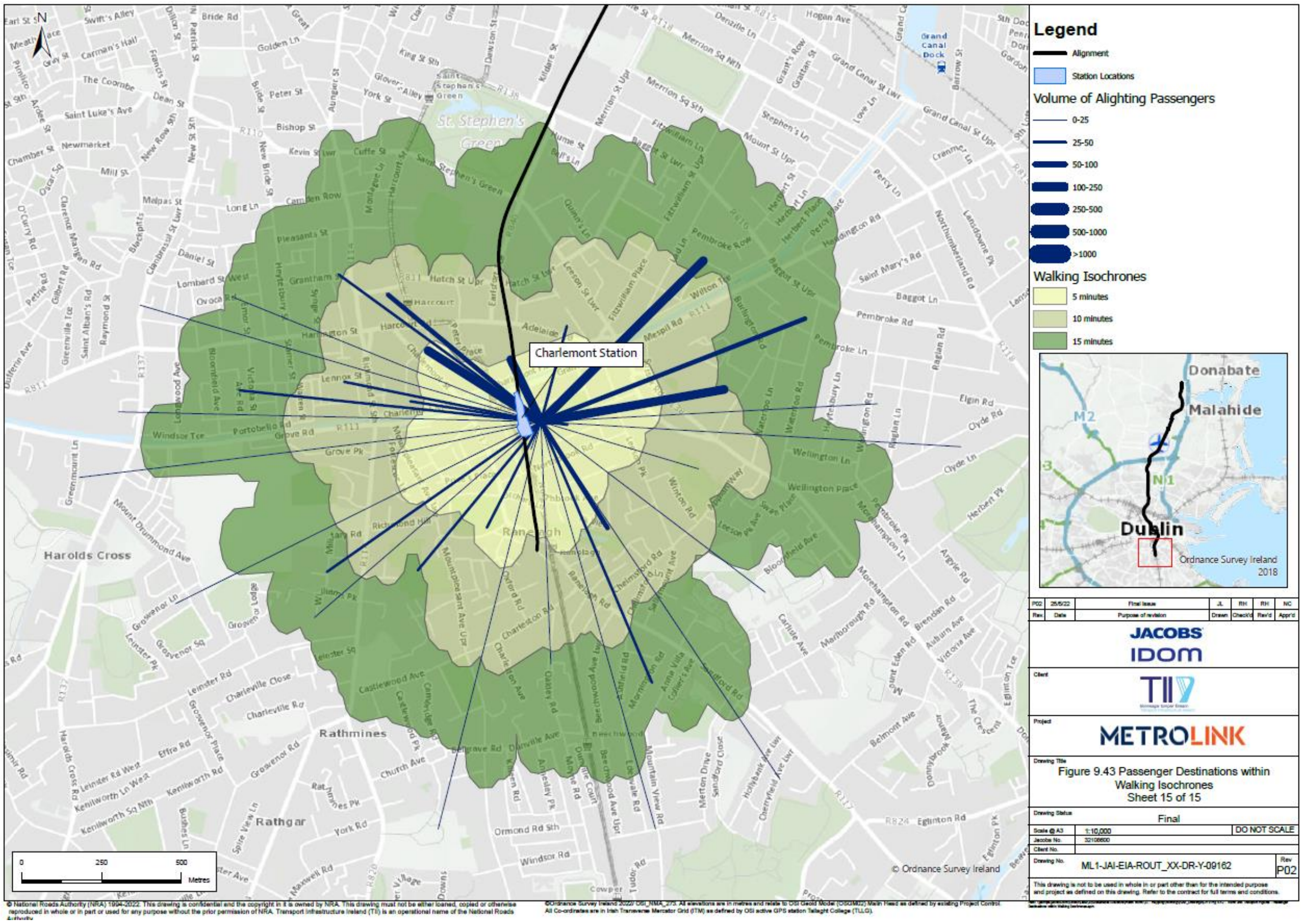


Figure 5.3: Destination for Alighting Passengers During AM peak hour and Walking Catchment Areas

6. Assessment of Impacts

6.1 Operational Phase

As part of the assessment of impacts associated with the Operational Phase of the project, the impact of the proposed Charlemont Station has been examined on all modes of transport – public transport (PT), general traffic, walking and cycling.

6.1.1 Public Transport Impact Assessment

The ERM model has been interrogated in order to estimate the reduction in private car travel associated with origin and destination trips in the zones around Charlemont Station. In Scenario A, there is a 12% increase in trip demand between 2035 and 2050, increasing from 160,581 trips in 2035 to 180,211 trips in 2050. There is a 12% increase in trip demand between 2050 and 2065, reaching a demand of 202,067 trips in 2065. Between the Do Minimum and Do Something scenarios, there is a 2 percentage point increase in PT mode share in 2035, from 38% in the Do Minimum scenario to 40% in the Do Something scenario. In both 2050 and 2065, there is an increase of 2 percentage points in PT mode share, increasing from 39% in the 2050 Do Minimum scenario, to 41% in the 2050 Do Something scenario, and from 40% in the 2065 Do Minimum scenario, to 42% in the Do Something.

Car mode share decreases by 1 percentage points in 2035 and 2050, from 26% in the Do Minimum to 25% in the Do Something, and from 24% in the Do Minimum to 23% in the Do Something scenario. In 2065, Car mode share has a 0 percentage point change, remaining at 22% in the Do Something scenario.

Active Modes mode share (which includes Walking and Cycling) reduces by 1-2 percentage points in all years. Whilst end-to-end Active Modes trips will reduce, there will be an increase in Active Modes trips to and from the station where passengers will interchange with the Project. Overall, there is a shift towards sustainable modes (Active Modes and PT combined), and a reduction in Car trip demand at Charlemont.

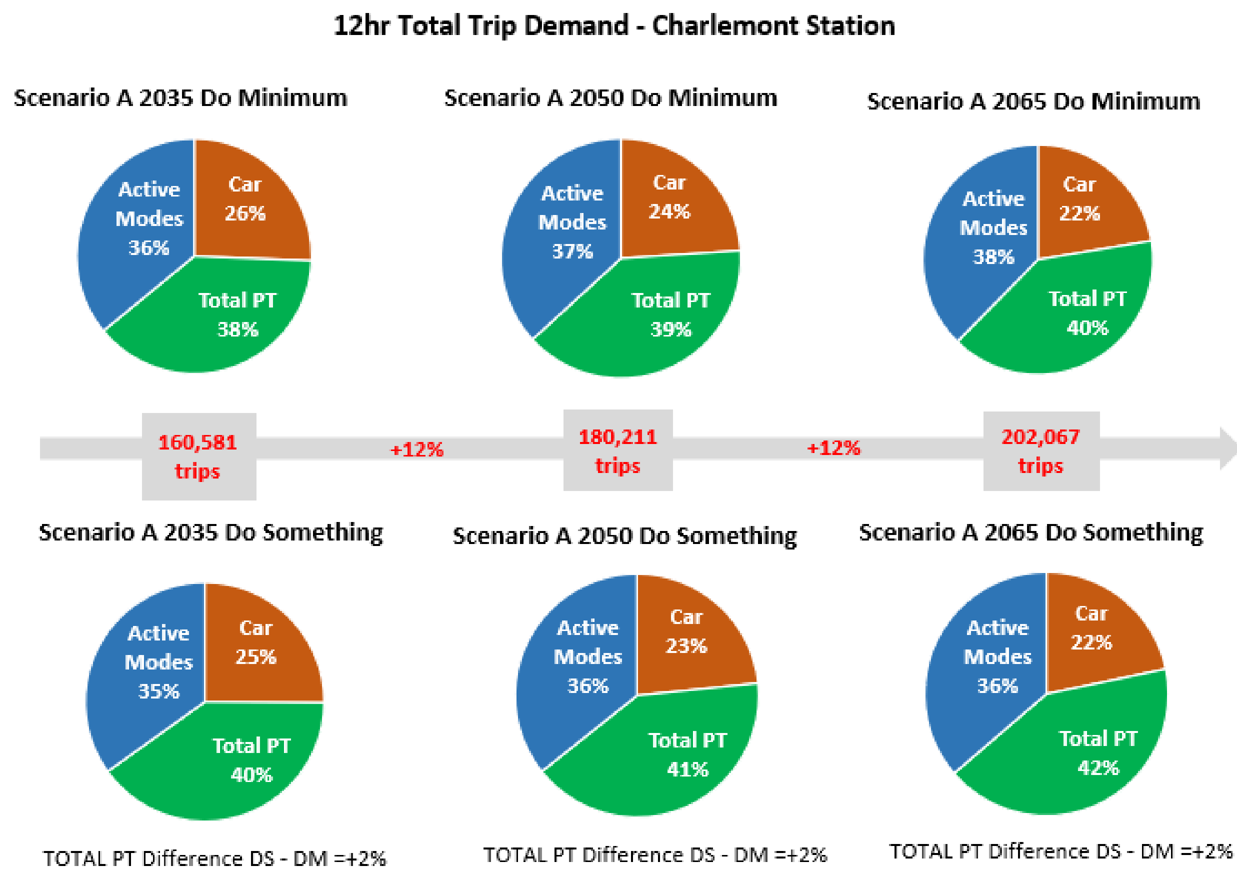


Figure 6.1: Charlemont Mode Share – Scenario A

In Scenario B, there is a 13% increase in trip demand between 2035 and 2050, increasing from 161,415 trips in 2035 to 182,730 trips in 2050. There is a 11% increase in trip demand between 2050 and 2065, reaching a demand of 203,727 trips in 2065. Between the Do Minimum and Do Something scenarios, there is a 1 percentage point increase in PT mode share in 2035, from 40% in the Do Minimum scenario to 41% in the Do Something scenario. In both 2050 and 2065, there is an increase of 1 percentage points in PT mode share, increasing from 43% in the 2050 Do Minimum scenario, to 44% in the 2050 Do Something scenario, and from 44% in the 2065 Do Minimum scenario, to 45% in the Do Something.

Car mode share decreases by 0 percentage point in 2035, remaining at 25% in the Do Something Scenario. In 2050, Car mode share decreases by 0 percentage points between the Do Minimum and Do Something scenarios, remaining at 23% in the Do Something scenario. In 2065, Car mode share also decreases by 0 percentage points, from 21% in the Do Minimum scenario to 21% in the Do Something scenario.

Active Modes mode share (which includes Walking and Cycling) reduces by 1 percentage points in all years. Whilst end-to-end Active Modes trips will reduce, there will be an increase in Active Modes trips to and from the station where passengers will interchange with the Project. Overall, there is a shift towards sustainable modes (Active Modes and PT combined), and a reduction in Car trip demand at Charlemont.

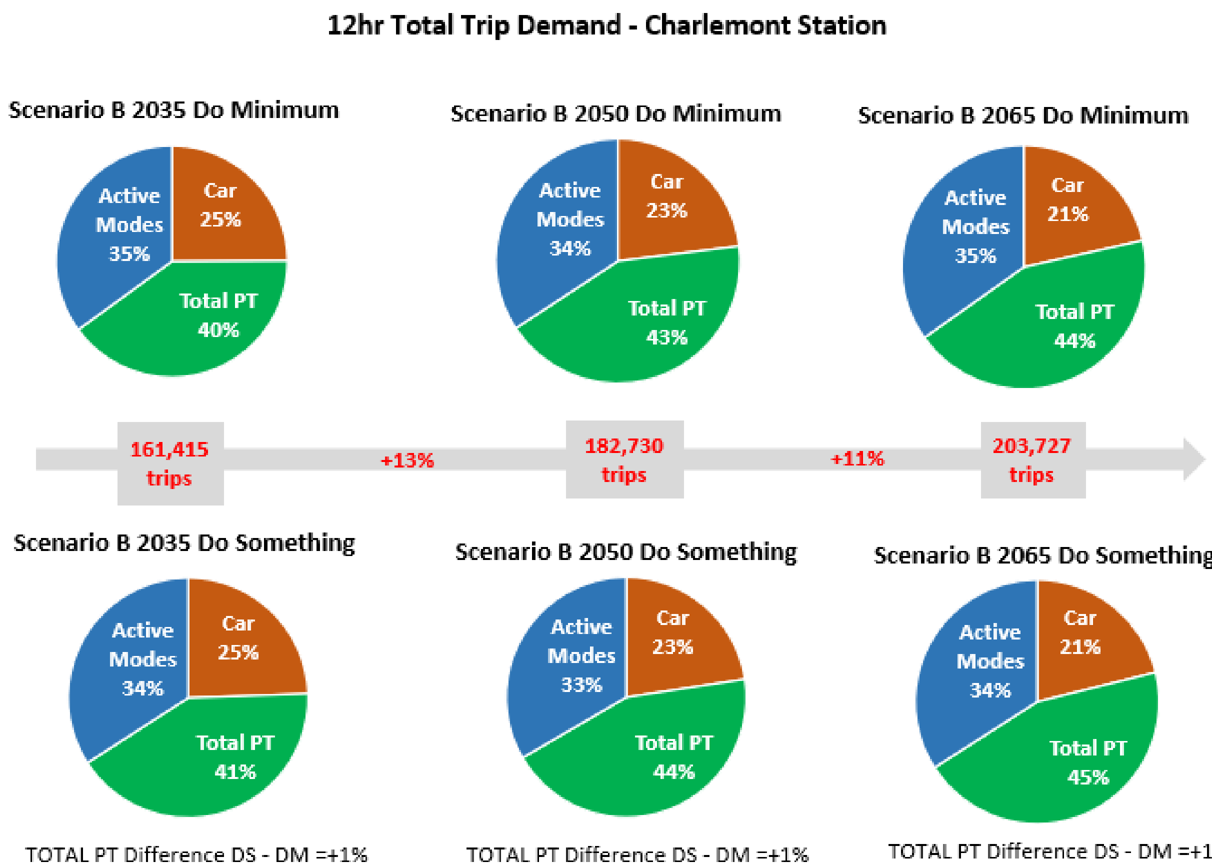


Figure 6.2: Charlemont Mode Share – Scenario B

Charlemont Station will provide the opportunity to interchange with the Luas Green Line to Sandyford, with approximately 1,200 passengers transferring both to and from Luas onto the Project in both Scenario A 2065 and Scenario B 2065 AM peak hour. The proposed street level layout will not make alterations to the existing bus network in this area. As part of the Bus Network Redesign proposals, Ranelagh Road will be served by Other City Bound routes 86, 87 and 88. E Spine routes will serve Leeson Street to the east of the proposed station, with A Spine routes serving Rathmines Road Lower in the west.

In the 2035 AM peak hour, the zones surrounding Charlemont station see an increase of up to 5 percentage points in PT (including the Project) mode share. This increase extends to a number of zones beyond the alignment in the 2050 and 2065 AM peak hours. The same results can be seen in Scenario B, and in the PM peak hour of both scenarios. Figure 6.3 presents the changes in public transport (including the Project) mode share in Scenario A 2065 AM peak hour, with Figure 6.4 presenting the same for Scenario B 2065.

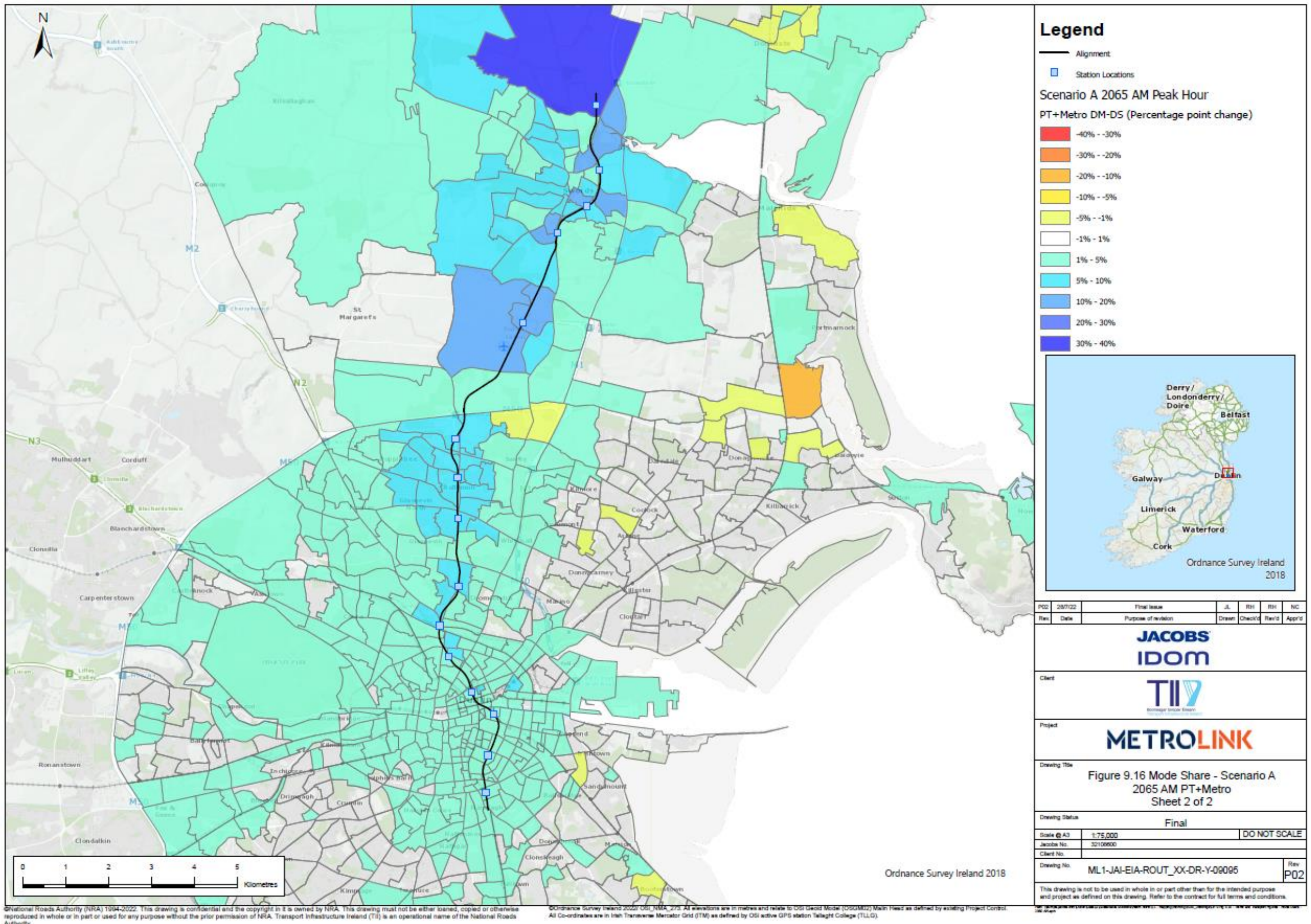


Figure 6.3: Changes in Public Transport (including the Project) in Scenario A 2065 AM Peak Hour

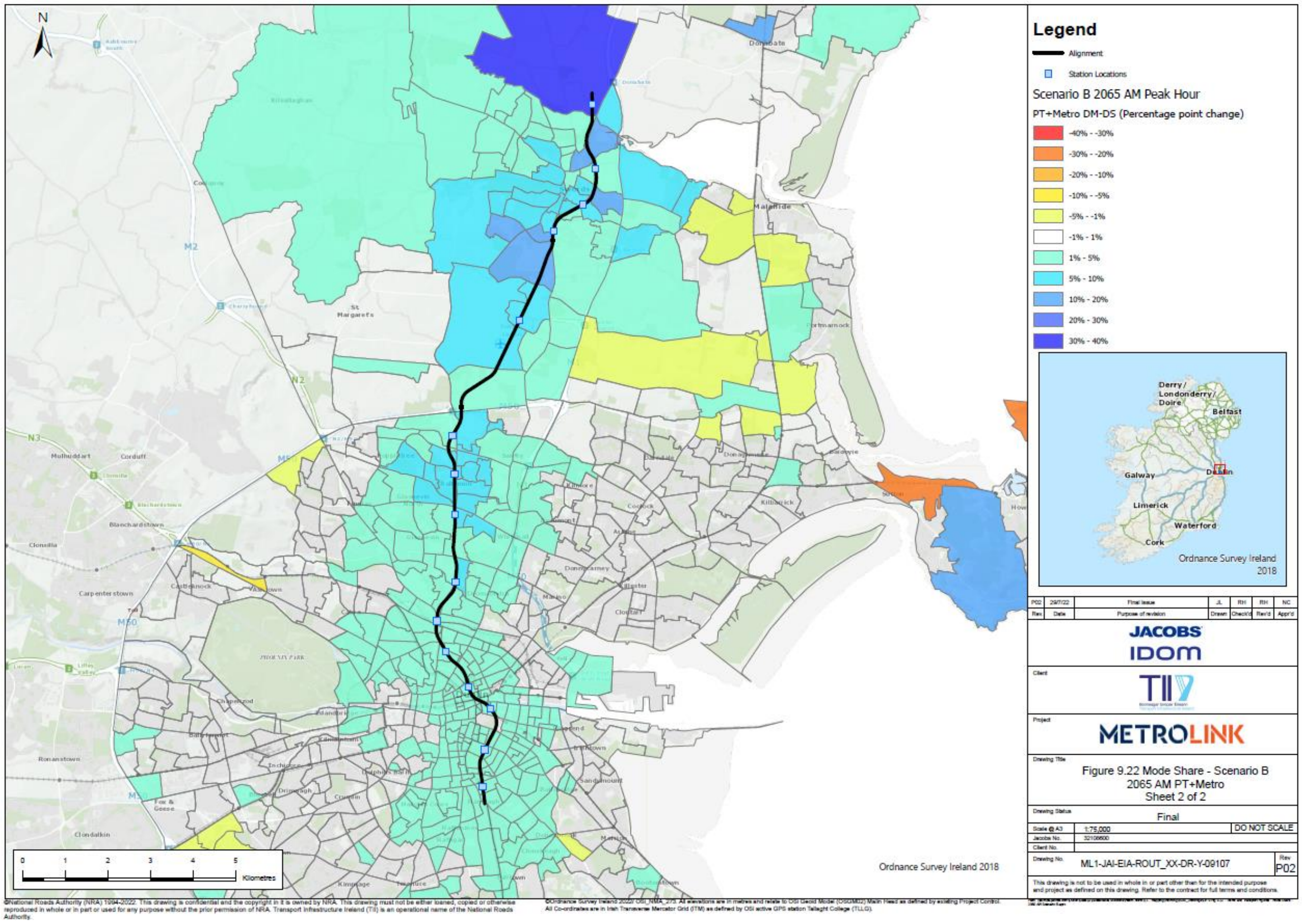


Figure 6.4: Changes in Public Transport (including the Project) in Scenario B 2065 AM Peak Hour

End-to-end public-transport-only journey time comparisons between Do Minimum and Do Something scenarios, including interchange between the Project vehicles and other public transport modes, have been undertaken to investigate benefits to journey time with the proposed Project in place in both Scenario A and Scenario B. The assessments were carried out for zones located across the city as illustrated in Figure 6.5 and Table 6.1. These zones have been identified using local knowledge of population settlements and trip attractors.

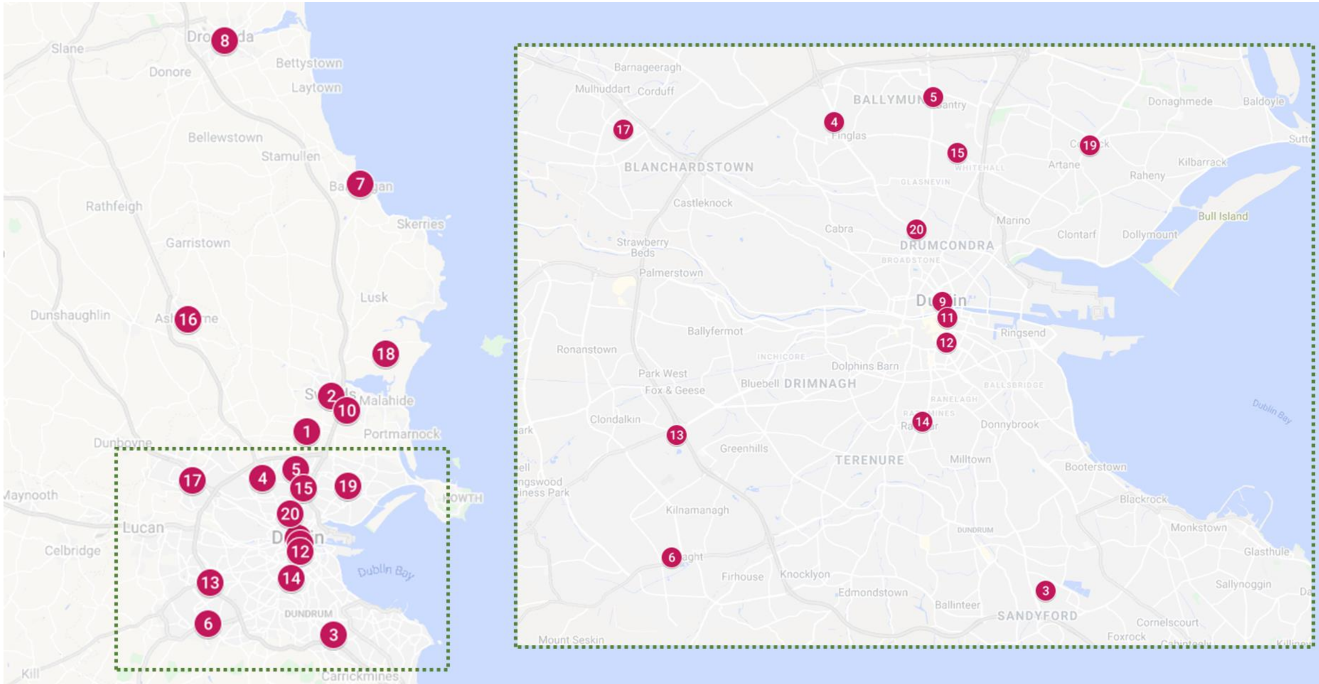


Figure 6.5: Zones assessed for public transport journey time

Table 6.1: Zones assessed for public transport journey time

Nb	Location	Nb	Location	Nb	Location	Nb	Location
1	Dublin Airport	**6**	Tallaght	**11**	College Street	**16**	Ashbourne
2	Swords Pavilion	**7**	Balbriggan	**12**	St. Stephen's Green	**17**	Blanchardstown
3	Sandyford	**8**	Drogheda	**13**	Red Cow	**18**	Donabate
4	Finglas	**9**	O'Connell Street	**14**	Rathgar	**19**	Coolock
5	Ballymun	**10**	Sword East	**15**	DCU	**20**	Glasnevin

Charlemont Station is located within the Rathgar zone/ area.

In Scenario A the following changes to journey times are observed:

- In the 2035, 2050 and 2065 AM period, public transport journeys from Charlemont, to Glasnevin, will see savings times of approximately 10 minutes when the proposed project is in place.
- Public transport journeys from Charlemont to key Dublin City Centre locations such as O'Connell Street, St. Stephen's Green and Trinity College will minimal savings of less than 1 minute across the 2035, 2050 and 2065 AM period.
- Public transport journeys from Charlemont to areas in north Dublin, such as Swords Pavilion and Dublin Airport, will see savings of up to approximately 30 minutes in the 2035, 2050 and 2065 AM period.

In Scenario B the following changes to journey times are observed:

- In the 2035, 2050 and 2065 AM period, public transport journeys from Charlemont, to Glasnevin will see time savings of approximately 11 to 13 minutes when the proposed project is in place.

- Public transport journeys from Charlemont to key Dublin City Centre locations such as O'Connell Street, St. Stephen's Green and Trinity College will experience minimal time savings of less than a minute during the 2035, 2050 and 2065 AM period.

- Public transport journeys from Charlemont to areas in north Dublin, such as Swords Pavilion see savings of approximately 23 to 26 minutes in the 2035, 2050 and 2065 AM periods; and to Dublin Airport, savings of approximately 26 to 27 minutes in the 2035, 2050 and 2060 AM period.

6.1.2 Traffic Impact Assessment

A new pedestrian crossing will be provided to the east of the station on Grand Canal; the impact of this has been assessed using the VISWALK model developed for the station. This demonstrates that it will have a minimal impact on driver delay on this road.

Figure 6.6 presents the changes in Car mode share between the Do Minimum and Do Something scenarios in Scenario A 2065 AM peak hour, with Figure 6.7 presenting the same for Scenario B 2065. In Scenario 2035 AM peak hour, the zones around Charlemont Station will see reductions in Car mode share of up to 5 percentage points. These reductions extended to zones further from the alignment in both 2050 and 2065. In Scenario B in all forecast years, there are many zones surrounding Charlemont Station which have a reduction in car mode share of less than 5%. Similar results can be seen in the PM peak hour in both scenarios.

Over the 12hr period, the zones within a 2km radius of Charlemont Station see a reduction of over 340 car trips between the Scenario A 2035 Do Minimum and Do Something scenarios, reaching a reduction of over 620 trips in Scenario A 2050. In 2065, there is a reduction of over 830 car trips between the Do Minimum and Do Something scenarios. In Scenario B, these zones see a reduction of over 310 car trips between the 2035 Do Minimum and Do Something scenarios, increasing to a reduction of 350 car trips in 2050. 2065 sees a reduction of 410 car trips between the Do Minimum and Do Something scenarios.

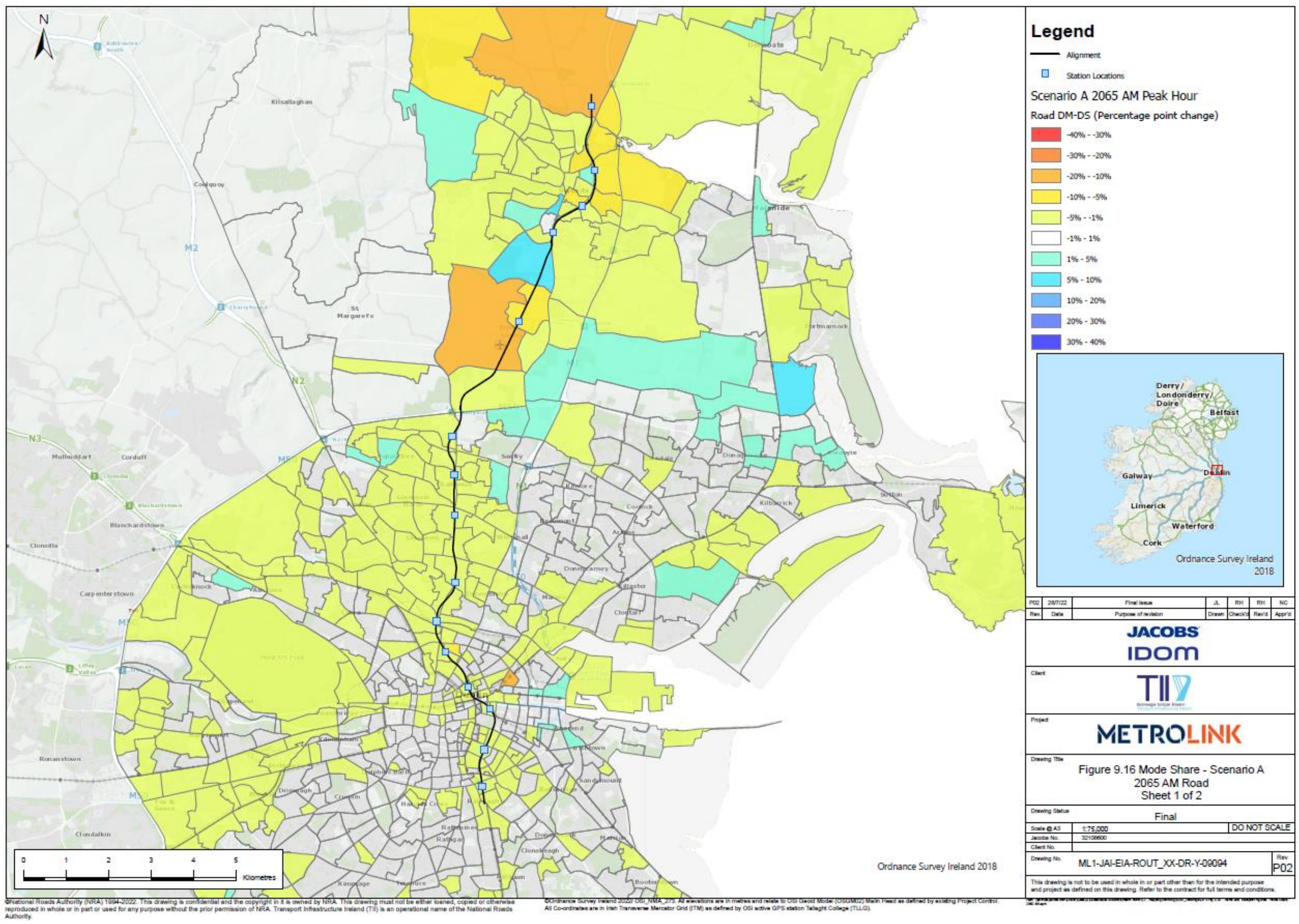


Figure 6.6: Changes in Car Mode Share in Scenario A 2065 AM Peak Hour

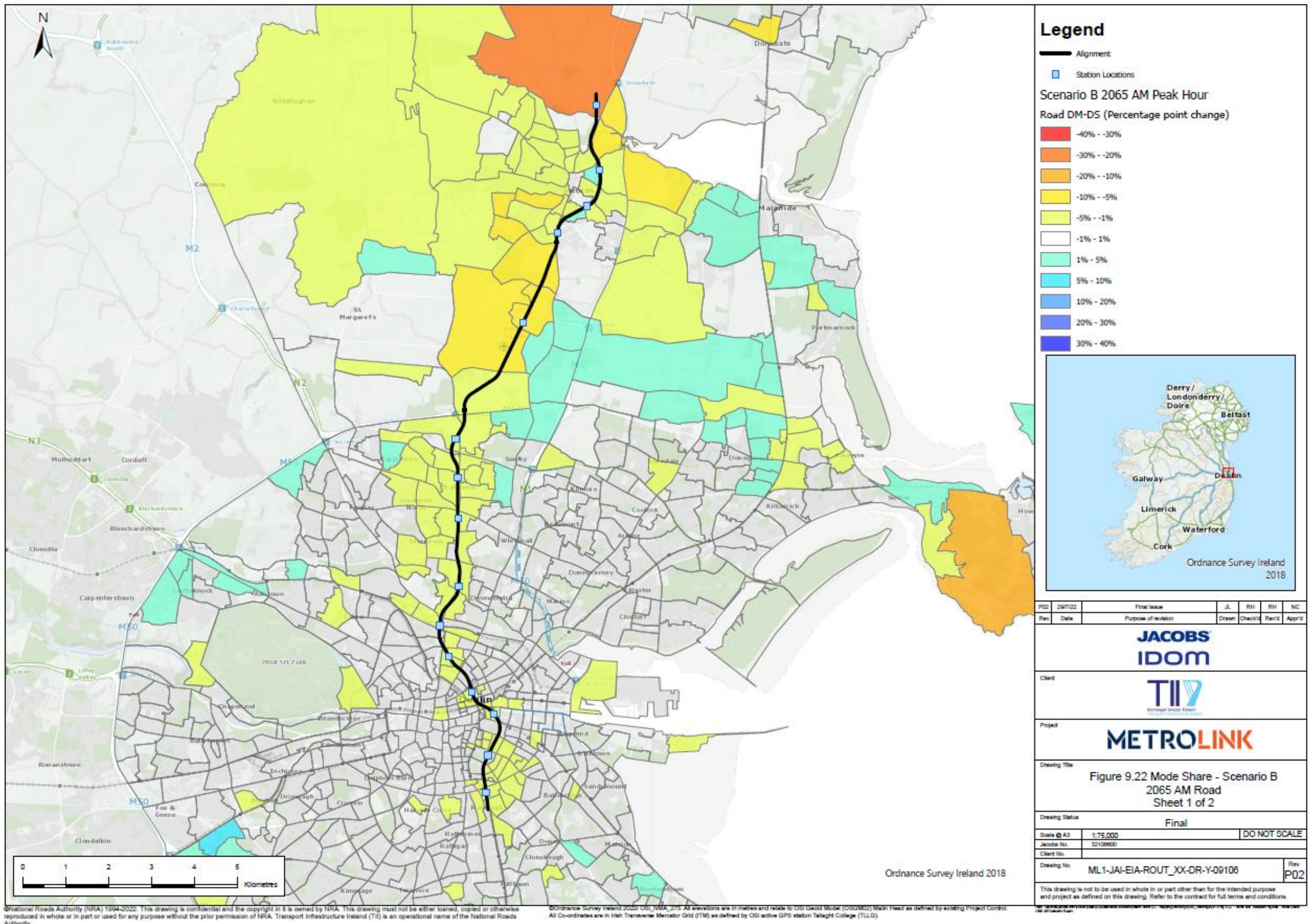


Figure 6.7: Changes in Car Mode Share in Scenario B 2065 AM Peak Hour

6.1.3 Pedestrian Impact Assessment

A pedestrian comfort assessment has been undertaken to assess the impact of the Project on the comfort of the footway provisions following the increased volumes of pedestrians on the network in the design years. The Scenario A 2050 design year was assessed, with Scenario A 2065 also assessed as the 'worst-case scenario' for passenger numbers, as this scenario has the highest volume of total AM passenger demand in the future year between both Scenario A and Scenario B (almost 61,000 AM boarding passengers across the alignment in Scenario A, compared to almost 55,000 AM boarding passengers in Scenario B). At all stations, the passenger demand in the AM peak hour is lower in Scenario B than in Scenario A, with the exception of Fosterstown Station where there is a 12% increase in Scenario B. As such, Scenario B has not been assessed, with the exception of Fosterstown Station to ensure that all possible significant impacts are accounted for.

The results show that in 2050 all links fall below DCC guidelines, with the exception of Dartmouth Road. Charlemont Street, Canal Road and Ranelagh Road have an 'Acceptable' level of comfort, while Grand Parade West is considered 'Unacceptable'.

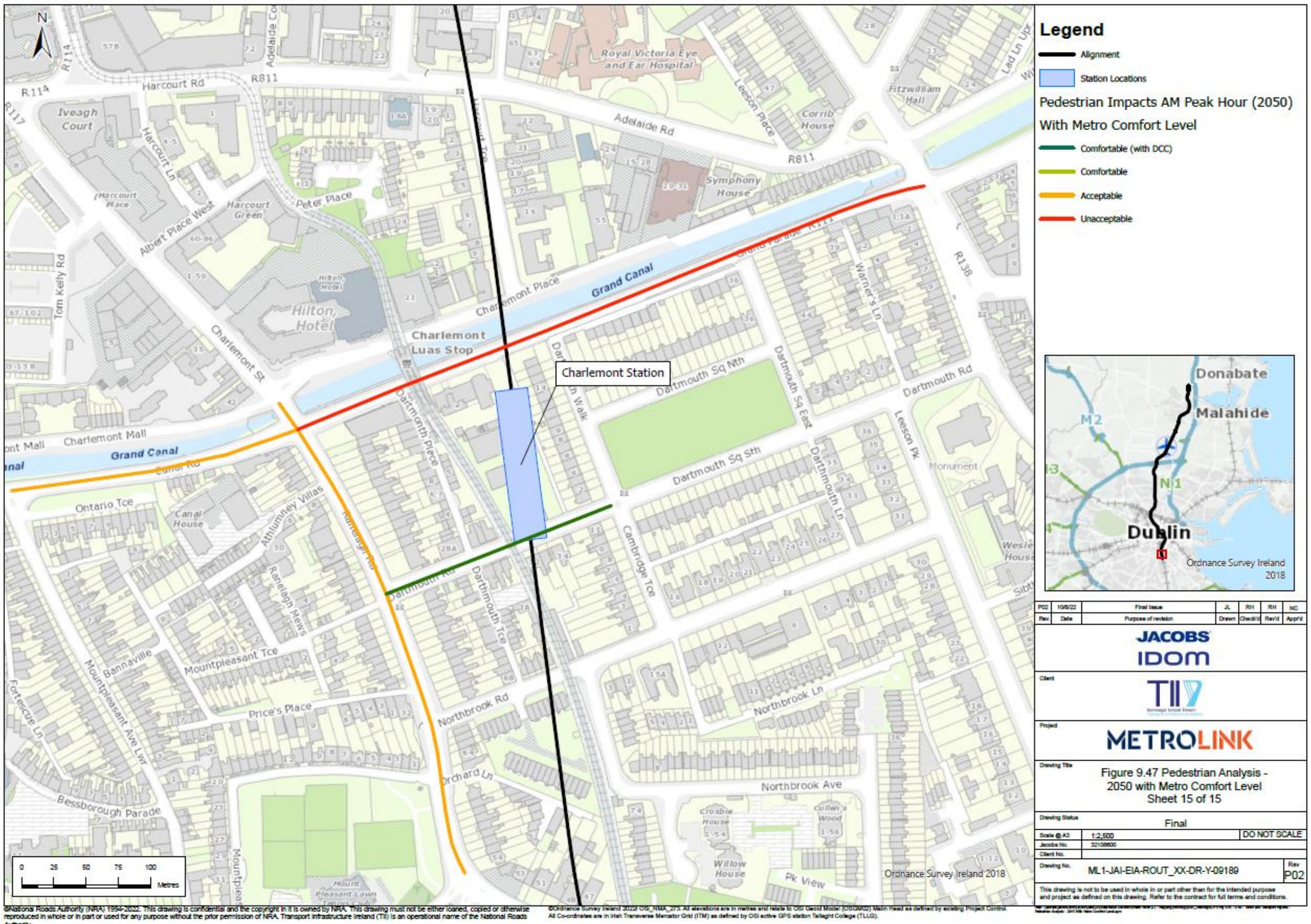


Figure 6.8 : Pedestrian Comfort Assessment with the Project Scenario A 2050 AM Peak Hour

Figure 6.9 shows the results from the Scenario A 2065 worst-case scenario for passenger demand at this station. The results show that all links will fall below DCC guidance, with the exception of Dartmouth Road. Both Charlemont Street and Grand Parade West are deemed ‘Uncomfortable’, while Canal Road and Ranelagh Road maintain an ‘Acceptable’ level of comfort.

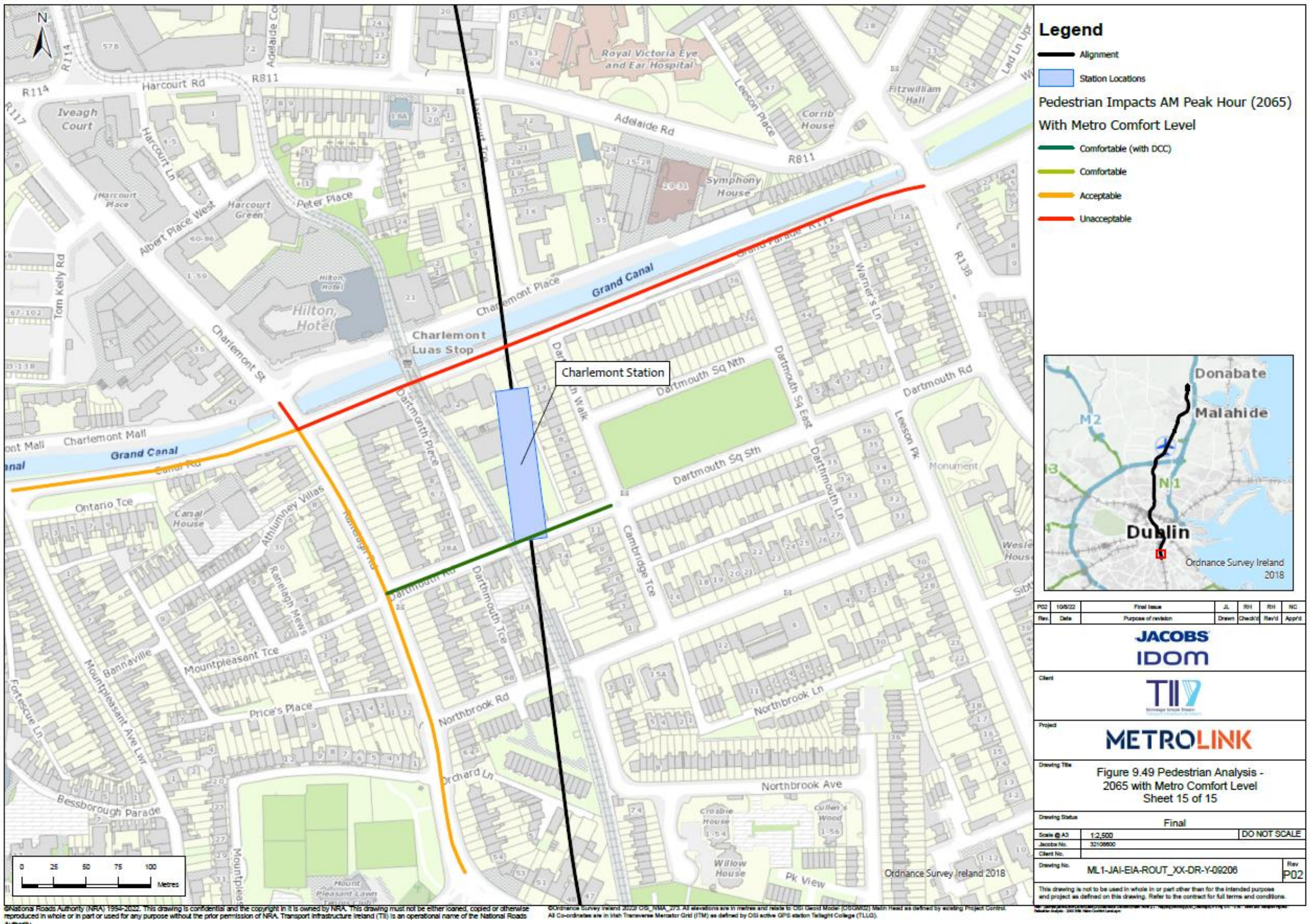


Figure 6.9: Pedestrian Comfort Assessment with the Project Scenario A 2065 AM Peak Hour

Further examination of the performance of the street network was undertaken using the VISWALK model.

6.1.3.1 Charlemont – Microsimulation VISWALK Model

A microsimulation VisWalk model has been developed for the immediate area surrounding Charlemont station. The network coverage of the model is shown in Figure 6.10. The simulation model covers the full extent of the publicly accessible station area, including the immediate vicinity of the station entrance at street level. It also covers the Luas stop and nearby junctions at Charlemont Bridge. The Charlemont MicroSim report further details the modelled process, model demands, and model development.

Pedestrian and passenger volumes and origin-destination were extracted from the NTA’s ERM Active Modes Model, with forecast pedestrian demands prepared for 2035 and 2050.

Charlemont Street also performs with a Level B Level of Service, however in some locations where traffic signal infrastructure is in place, the level of service reduces and there is frequent conflict.

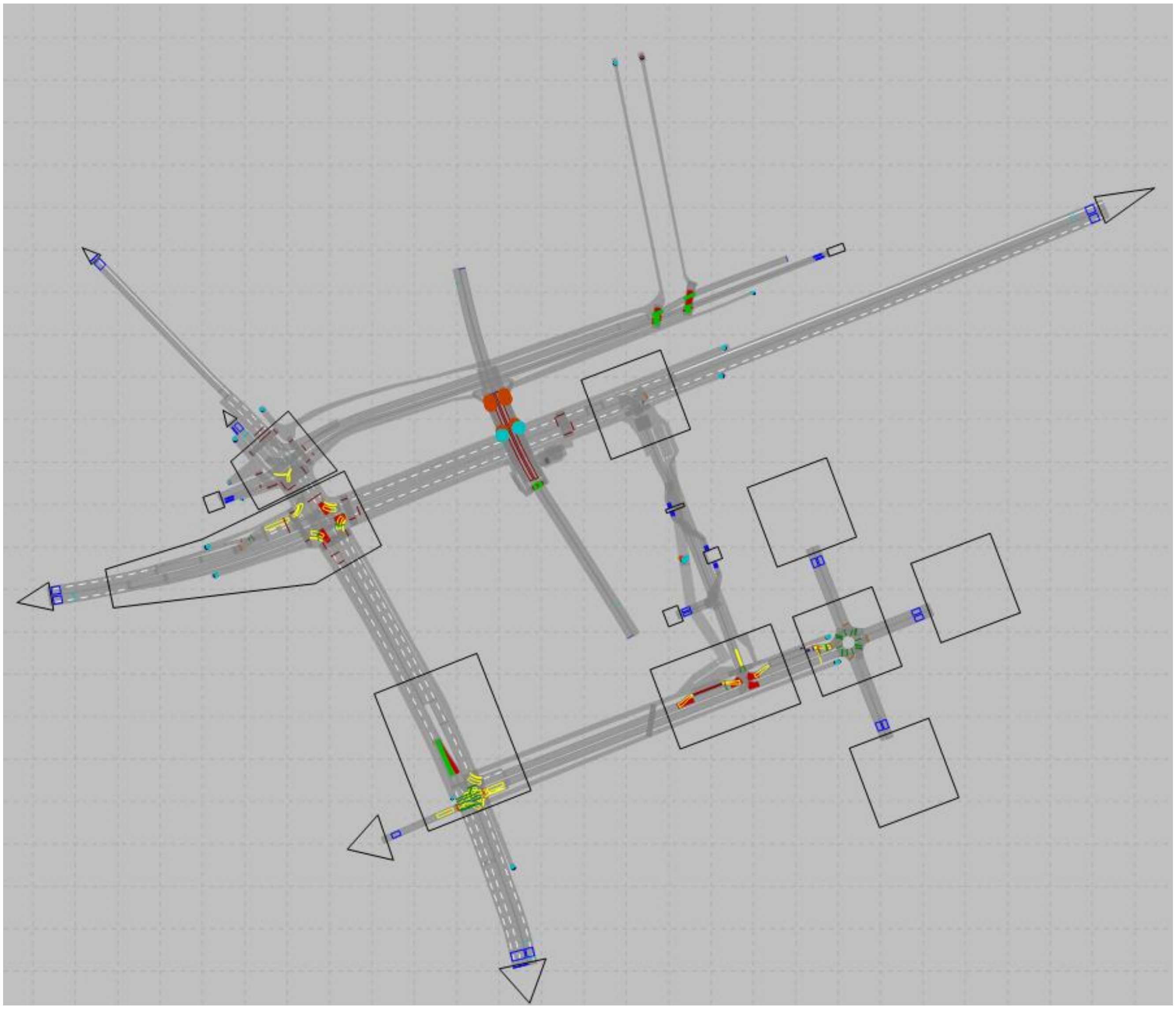


Figure 6.10: Layout of Charlemont microsimulation model network

Observations of the Vissim microsimulation model show that the current street layout and Luas access facilities would provide a low level of service and result in congestion for pedestrians when the Project is operational. This is especially the case on the R111 Grand Parade and the south-western access to the Luas station.

In order to accommodate forecast demand from the Project station, a new staircase with 2.4m stair width is proposed at the south-east corner of Charlemont Luas stop. An elevator would also be provided at this location. In addition, it is proposed that the pedestrian crossing on R111 Grand Parade be repositioned to the front of the Hines building.

General operation of the model looking west towards the Luas station is shown in Figure 6.11. This figure indicates the location of the pedestrian crossing on Grand Parade and the new stairwell at the south-east of the Luas station.

Figure 6.11: Operation of Charlemont microsimulation model

In order to assess the performance of the pedestrian network with the Project in place, Level of Service (LOS) indicators have been retrieved from the model. The LOS scale used in the assessment is shown in Figure 6.12.

Fruin's Level of Service	Average area module		
	Walkway [m²/ped]	Stairs [m²/ped]	Queue [m²/ped]
A	>3.24	>1.85	>1.21
B	3.24-2.32	1.85–1.39	1.21-0.93
C	2.32-1.39	1.39-0.93	0.93-0.65
D	1.39-0.93	0.93-0.65	0.65-0.28
E	0.93-0.46	0.65-0.37	0.28-0.19
F	<0.46	<0.37	<0.19

Figure 6.12: Fruin's Scale Level of Service key representing A as least congested and F as heavily congested

The LOS for the 2050 AM model scenario is shown in Figure 6.13.

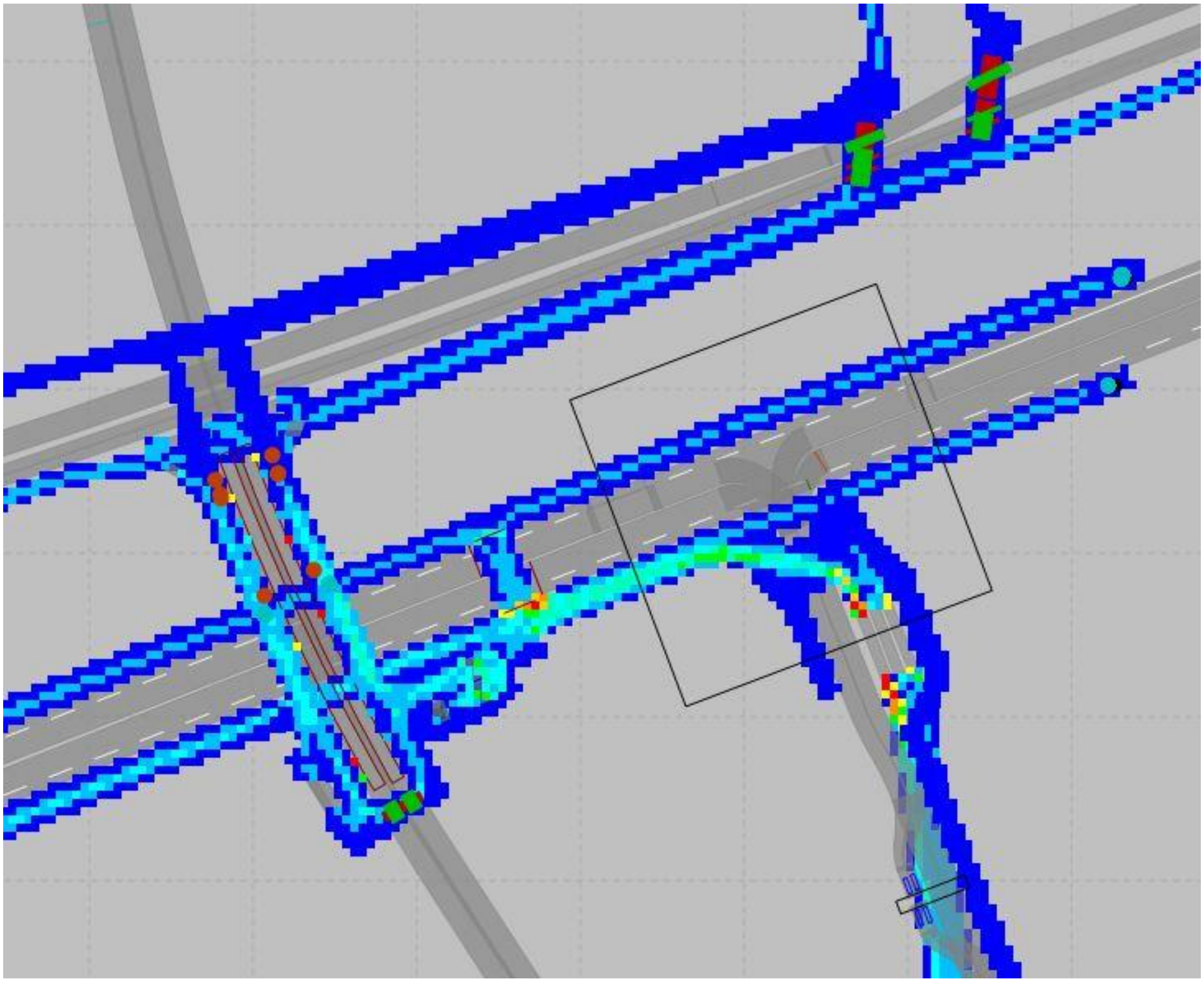


Figure 6.13: Level of Service heat map for Charlemont during 2050 AM peak

The LOS for the 2050 PM model scenario is shown in Figure 6.14.

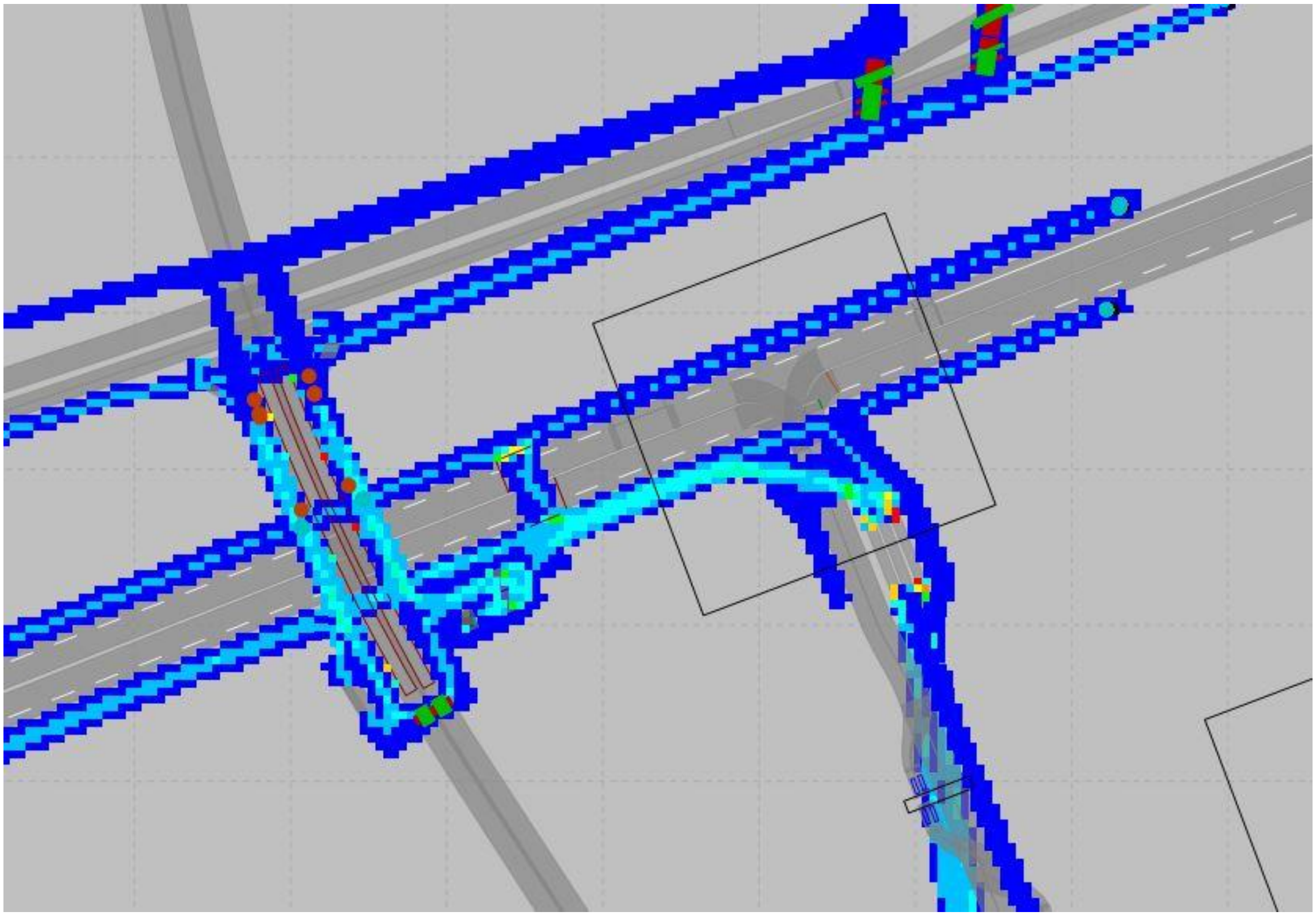


Figure 6.14: Level of service heat map for Charlemont during 2050 PM peak

With the new pedestrian infrastructure in place, the Vissim microsimulation model indicates that R111 Grand Parade will have a Level B Level of Service overall, however at the location of the proposed pedestrian crossing the Level of Service is lower with ‘some restriction in selection of walking speed and ability to pass others’, this occurs as pedestrians are required to wait for a green phase at the signals. Overall, it is considered that the model displays an acceptable level of network performance in the assessment.

6.1.4 Cyclist Impact Assessment

The future street level layout will maintain the existing cycle infrastructure at Charlemont Station and therefore there will be no impact to the Quality of Service of cycling infrastructure around Charlemont station when the Project is in place.

A methodology has been applied to determine the potential demand for cycle parking at each of the stations. This methodology utilises the number of boarding and alighting passengers, the distance of origin/destinations from the station, and the location of the station. The passenger demand from an earlier Opening Year has been utilised to determine the potential cycle demand in the Opening Year, and in the Opening Year +5 Years.

This approach has informed the design and the number of cycle parking spaces provided at each station. Other factors such as the availability of land, potential future land uses, and parking supply and the location of the station have also been taken into consideration by the design team in determining the quantum of cycle parking spaces provided.

For the Charlemont Station, a total of 162 cycle spaces are proposed.

6.1.5 Road Safety

A Stage 1 Road Safety Audit has been undertaken for all of the proposed highway works for the Project. This is under a separate cover.

7. Summary

In Scenario A, Charlemont station will facilitate approximately 29,500 passenger movements over the 12hr peak period (07:00-19:00) in 2035, rising to over 36,300 in 2050 and over 44,000 in 2065. In Scenario B, Charlemont station will facilitate approximately 31,400 passenger movements over the 12hr peak period (07:00-19:00) in 2035, rising to over 35,300 in 2050 and over 40,600 in 2065.

The main catchment origins and destinations of the people boarding and alighting at the Charlemont station will be

- Origins from residential areas in Ranelagh;
- Origins from residential areas in Portobello;
- Destinations at St. Stephen's Green; and,
- Destinations at employment and commercial uses in Camden Street area.

When the Project is in place, there will be changes to mode share in the individual zones surrounding the Project. Public transport mode share will increase by approximately 5 percentage points, while Car more share will reduce by up to 5 percentage points. This is a reduction of approximately 830 car trips to and from the zones surrounding Charlemont Station over the 12hr period in Scenario A 2065. In Scenario B 2065, there is a reduction of 410 car trips over the 12hr period between the Do Minimum and Do Something scenarios.

In the Scenario A 2035, 2050 and 2065 AM period, public transport journeys from Charlemont, to Glasnevin, will see savings times of approximately 10 minutes when the proposed Project is in place. Public transport journeys from Charlemont to areas in north Dublin, such as Swords Pavilion and Dublin Airport, will see savings of approximately 30 minutes. In Scenario B, public transport journeys from Charlemont, to Glasnevin will see time savings of 11 to 13 minutes when the proposed Project is in place.

The station will also provide for 162 cycle parking spaces. The future receiving environment will be able to accommodate the anticipated pedestrian flows in 2050, with the exception of Grand Parade West, however in future scenarios improvements will be required on Charlemont Street and Grand Parade to improve the pedestrian comfort levels on these links, particularly in the vicinity of the interchange with the Luas Green Line. With the new pedestrian infrastructure in place, the Vissim microsimulation model indicates that R111 Grand Parade will have a Level B Level of Service overall, however at the location of the proposed pedestrian crossing the Level of Service is lower with 'some restriction in selection of walking speed and ability to pass others', this occurs as pedestrians are required to wait for a green phase at the signals. Overall, it is considered that the model displays an acceptable level of network performance in the assessment.

In overall terms, the Charlemont station will provide for improvements to the public transport network resulting in decreases in private car usage/trips, increases in public transport usages and will facilitate walking and cycling to the station, without significantly impacting on the operation of the road network in the area.